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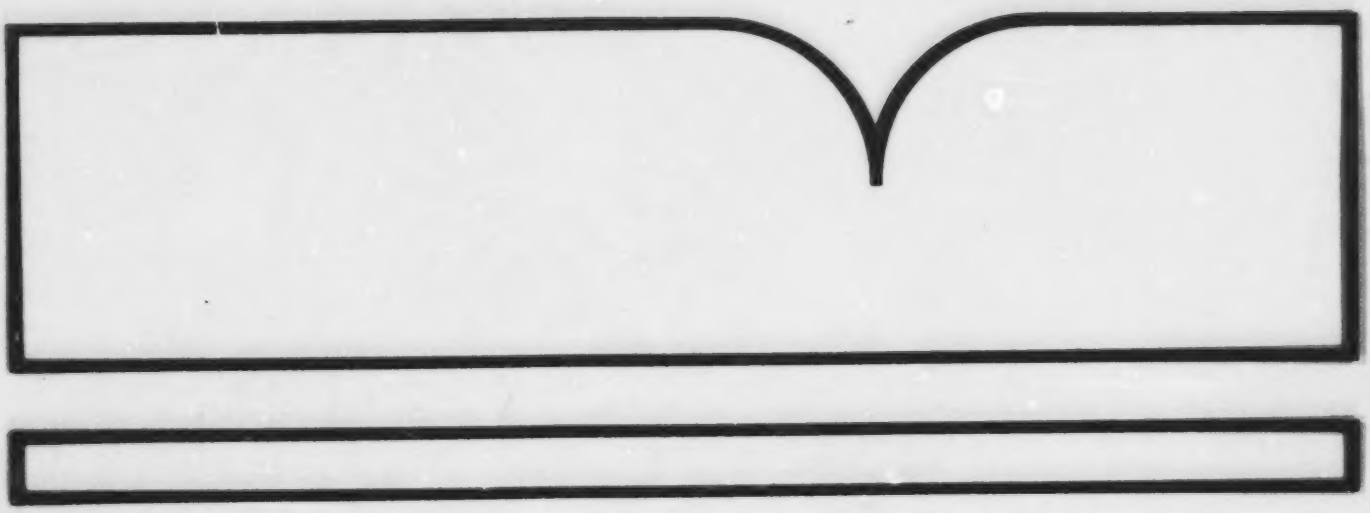
Fish Kills Caused by Pollution in 1976
Seventeenth Annual Report

(U.S.) Environmental Protection Agency
Washington, DC

1979



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The report is an analysis of pollution-caused fish kills compiled from data supplied by State officials. It includes analytical text and the following tables: major kills, historical summary, summaries by State, source, water body, kills within EPA regions, average number of fish killed, changes in aquatic food organisms, corrective action, severity, selected questions, type of water, month, and duration. Also includes a cumulative listing of the reports of fish kills-cause unidentifiable and cause unknown.

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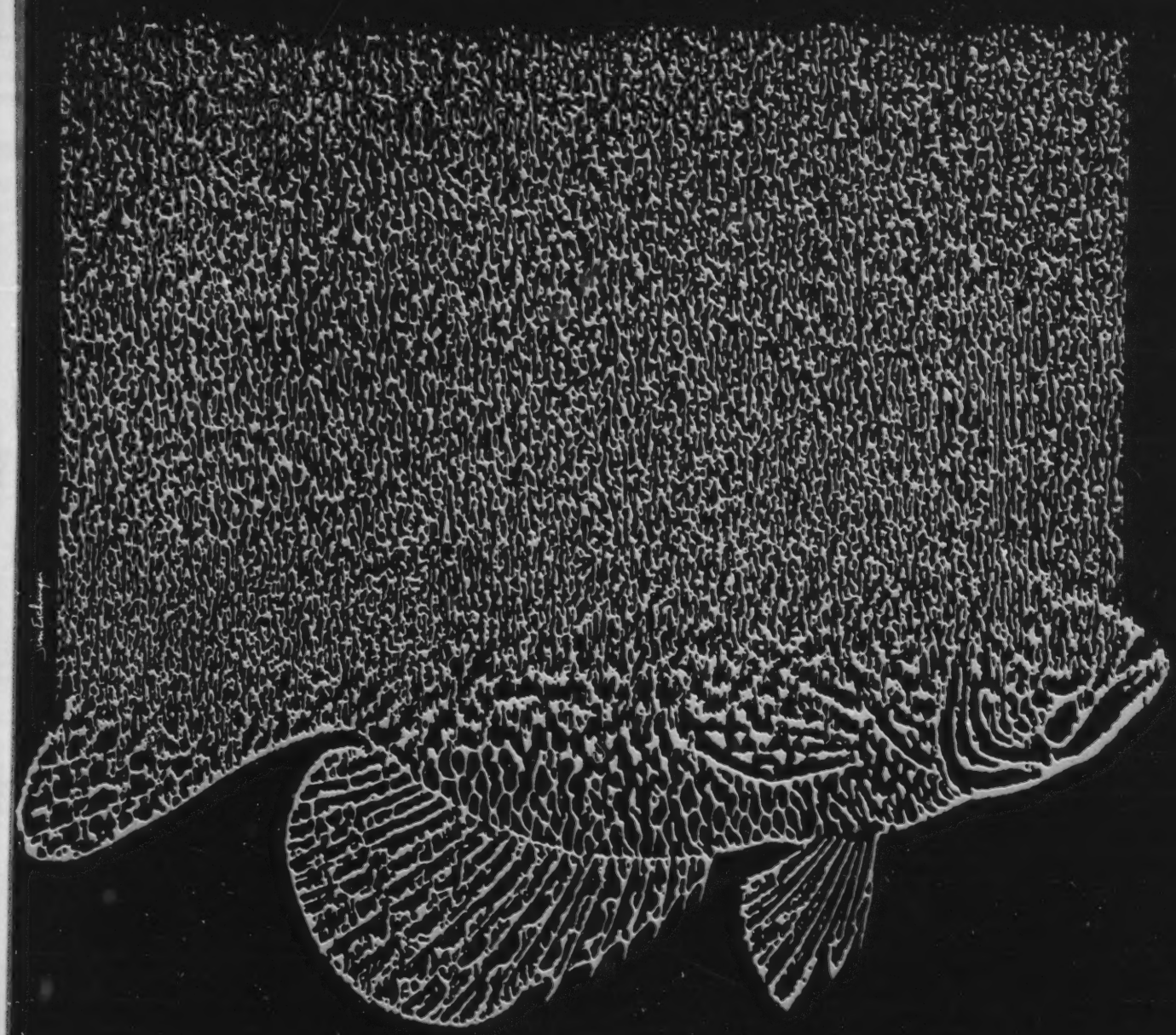

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Seventeenth Report

United States
Environmental Protection
Agency

Office of Water Planning
and Standards
Monitoring and Data Support
Division
Monitoring Branch

Washington D.C. 20460

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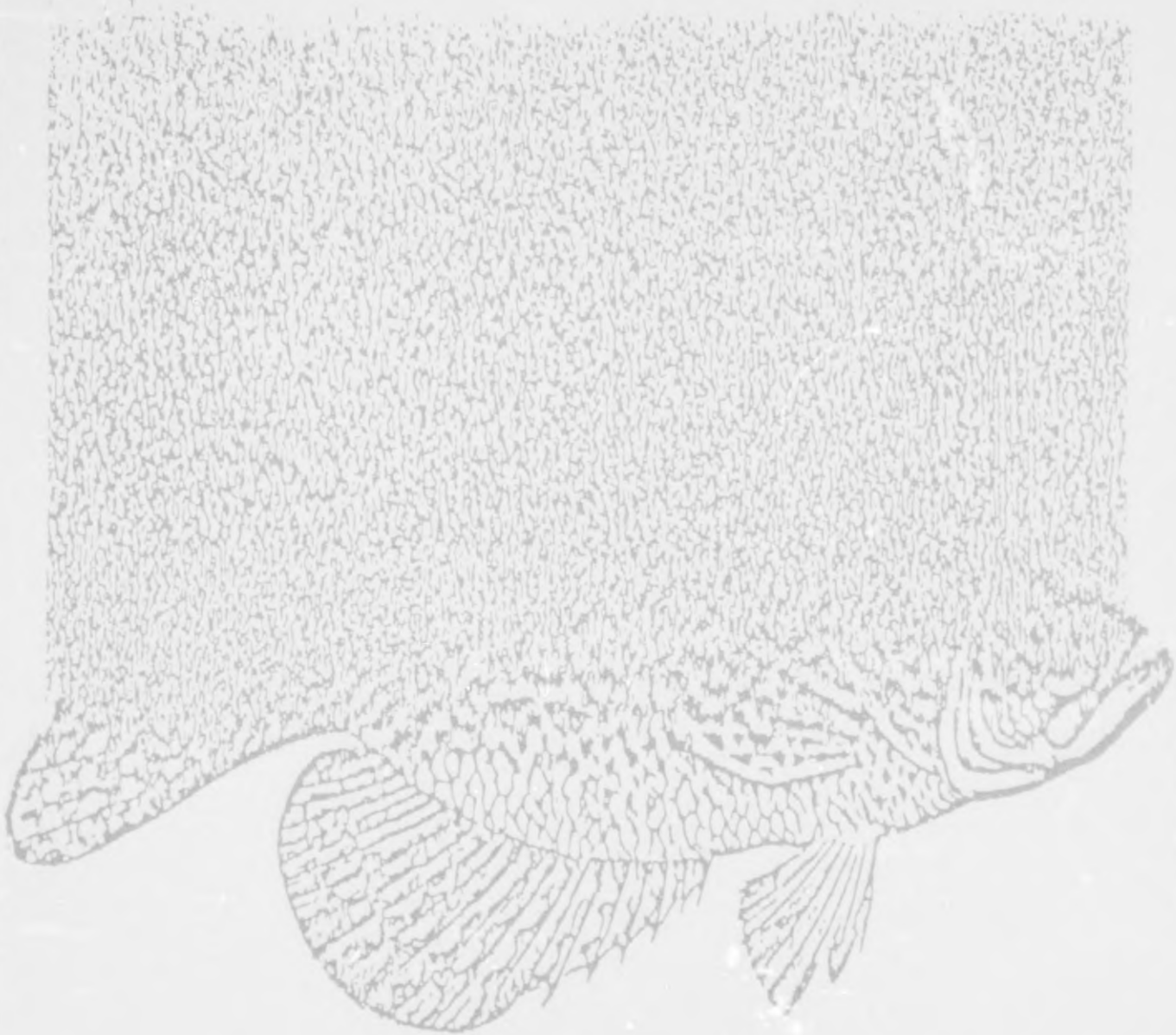

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Introduction

This seventeenth annual fish kill report is based on voluntary reporting by State and local agencies. The report includes an analysis of data which describes the number incidents, the total number of fish killed, the average size of a kill, and details of the largest fish kill or kills reported. The report also includes the number of reported incidents by each pollution source category and by the individual sources of pollution under these major categories.

Since fish kill reporting is done on a voluntary basis, it should be stressed that the pollution-caused fish kills reported in this publication probably represent only a fraction of the kills which actually occurred during the 1976 period. Numerous small kills go unnoticed or unreported, and some significantly large kills are not included due to lack of sufficient information to determine if the kills were caused by pollutants or were due to natural causes. It is often quite difficult to determine the actual cause of a kill, even when the most careful investigative and analytical procedures are used.

The Public Health Service began reporting pollution-caused fish kills on June 1, 1960, under the authority of the Federal Water Pollution Control Act, PL 84–660, Section 4(C).

In 1960, the Surgeon General of the Public Health Service requested that all State fish and game conservation agencies report instances of fish kills attributable to pollutants. Working closely with the U.S. Fish and Wildlife Service and various independent conservation organizations, the Public Health Service designed a self-addressed post card reporting form (Appendix D). This form was furnished to the State agencies to be completed when fish kills occurred. Summary totals, statistical evaluations, and conclusions are based upon the information contained in these reporting forms.

In 1972, the responsibility for fish kill reporting was transferred to the United States Environmental Protection Agency (EPA) in an attempt to secure additional information on the effects of pollutants discharged to surface waters. The principal objective was to determine, if possible, the causes of fish kills, and to place responsibility when kills were caused by man-made pollution.

The annual EPA fish kill reports represent the combined voluntary efforts of private individuals, State fish and game, health, and conservation officers, and water pollution control officials at the State and Federal level. Usually, a fish kill is first noticed by a fisherman, camper, or other private citizen who initiates the reporting process by contacting a warden or other state official. The State agency then sends sends trained specialists to investigate and identify the species involved and the cause and size of the kill. Where water pollution is determined or suspected to be the cause, the State submits a report to the EPA.

The reporting system depends, to a large extent, upon individuals in the field making State officials aware of fish kills. It is quite likely that the large increases in reports since 1970 over earlier years are at least partially a result of increased public awareness of pollution. In an effort to further increase this awareness and to encourage individuals to report kills to State officials, we are including Appendixes A, B, C, D, and E to this report:

- Appendix A—Report of Fish Kills, 1976-Cause Identified;
- Appendix B—Report of Fish Kills, 1976-Cause not specifically Identified;
- Appendix C—A list of State agencies who should be notified of kills;
- Appendix D—A reproduction of the report form to show the information desired; and,
- Appendix E—A definition of the types of operations identified as pollutant sources.

Statistical Highlights

The following are summary statistics of fish kills reported in 1976.

- All States Reported in 1976

For the fifth time since the inception of the annual pollution-caused fish kill reporting system in 1960, every State in the Union participated. Seven States reported no fish kills.

- A Marginal Increase was Registered in the Number of Reported Fish Kills Over that of 1975

Since 1971, when 860 fish kill reports were submitted, there had been a continuous decrease in the number of fish kills reported until this year. However, the number of fish reported killed was the lowest since 1967.

- Over 484 Million Fish Reported Killed Since 1960

The 13.6 million fish reported killed in 1976 brought the cumulative total of all fish reported killed by water pollution since 1960 to 484 million.

- Agricultural Operations Led All Operations in the Number of Fish Kill Incidents

In 1976, the 151 fish kills reported under agricultural operations led all other identified pollution sources in the number of reported fish kill incidents.

- Municipal Operations Killed More Fish Than Any Other Pollution Source in 1976

The 10.3 million fish killed by pollution from municipal operations represent 76 percent of the 13.6 million fish reported killed in 1976.

Basic Statistics

In 1976, 667 fish kill reports were submitted (Table 1). Of these, 601 reports (90 percent of the total) stated the number of fish killed. In the remaining 66 reports submitted, fish losses were either not stated, or were not expressed in numerical terms.

From 1961 through 1976, the estimated number of fish killed annually ranged from a low of 6.9 million in 1963 to a record high of 119 million in 1974. In 1974, 47 million fish were reported killed in Back River, near Essex, Maryland, the record high for a single incident.

In 1976 the lowest number of fish (13.6 million) were reported killed since 1967.

In 1976 as in previous years, most of the incidents were small—that is, they killed fewer than 10,000 fish apiece. However, most of the fish were killed in very few incidents. For instance, 65 percent of the fish killed were reported killed in only three of the 667 incidents (Table 1).

In 1976, sources of pollution were identified in 513 of the 667 reports. These kills are listed individually in Appendix A. The 154 kills for which the pollution source could not be positively identified are listed in Appendix B.

Table 1 contains historical data for the seventeen years that fish kill reports have been received. The table summarizes the following: the number of States reporting; th number of reported pollution-caused fish kill incidents; the number of reports which speci how many fish died; the reported number of fish killed; the largest single fish kill for each year; the number of reports for each pollution source operation; and a breakdown of fish killed by size of kill. The number of incidents and the numbers of fish killed are probably understated because of incomplete reporting and the difficulties of estimating numbers of dead fish.

Table 1—Historical Summary of Pollution-Caused Fish Kills, June 1960-December 1976

	1960[2]	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Number of States responding	38	45	37	38	40	44	46	40	42	45	45
Number of reports	289	413	421	442	590	625	532	454	542	594	635
Reports which state number of fish killed	151	265	246	304	470	520	453	354	469	492	563
Total reported number of fish killed	6,035,000	14,910,000	44,001,000	6,937,000	22,914,000	12,140,000	9,614,000	11,291,000	15,815,000	41,166,000	22,290,000
Average size of kill[1]	2,925	6,535	5,710	7,775	5,490	4,310	5,620	6,460	6,015	5,860	6,412
Largest kill reported	5,000,000	5,387,000	3,180,000	2,000,000	7,887,000	3,000,000	1,000,000	6,549,000	4,029,000	25,527,000	3,240,000
Number of reported incidents for each pollution source operation											
Agricultural	79	74	51	84	131	114	88	87	77	117	108
Industrial	103	169	209	199	193	244	195	139	177	199	213
Municipal[3]	24	52	33	60	120	125	87	91	122	84	120
Transportation	0	0	1	17	26	27	27	23	39	32	28
Other	33	58	47	27	17	23	38	35	23	33	28
Unknown	50	60	80	55	103	92	97	79	104	129	138
Total reports	289	413	421	442	590	625	532	454	542	594	635

Number of reports and fish killed by size grouping	No reports	No fish (millions)	No reports	No fish (millions)	No reports	No fish (millions)	No reports	No fish (millions)	No reports	No fish (millions)	No reports	No fish (millions)	No reports	No fish (millions)	No reports	No fish (millions)	No reports	No fish (millions)	No reports	No fish (millions)	No reports	No fish (millions)
1,000,000 or more	1	5.0	4	12.6	2	41.0	1	2.0	5	16.9	3	5.4	2	2.0	1	6.5	3	6.1	4	35.1	5	11.4
100,000 to 1,000,000	3	0.53	5	0.85	9	1.69	12	2.68	15	3.82	17	4.62	23	5.48	7	2.66	30	7.44	9	3.15	26	7.44
10,000 to 100,000	15	0.31	45	1.05	38	1.01	54	1.82	59	1.65	63	1.42	58	1.53	49	1.58	64	1.79	81	2.06	91	2.73
1,000 to 10,000	64	0.18	107	0.34	89	0.30	134	0.41	167	0.49	202	0.59	185	0.55	143	0.46	153	0.48	165	0.52	198	0.62
0 to 1,000	68	0.02	104	0.03	108	0.03	103	0.03	224	0.07	235	0.07	185	0.05	164	0.05	219	0.06	233	0.06	243	0.07
No size reported for incident	138		148		175		138		120		105		79		90		73		102		72	
Average duration of kill in days		2.95		2.64		2.59		3.18		2.44		2.57		2.71		3.34		2.99		3.11		3.25

[1] Derived after excluding reports of 100,000 kills or more as being unrepresentative.

[2] Reporting system in effect for last six months of 1960.

[3] Municipal operations include electric power generating stations.

National Fish Kill Summary by Sources of Pollution

A total of 13.6 million fish were reported killed in 601 separate incidents of water pollution from all sources (Table 2). In the remaining 66 reports submitted, fish losses were either not stated, or were not expressed in numerical terms.

Figure 1 is a national chart which indicates by percentages the total fish kills (incidents) as reported by the type of operation which was responsible for the fish kill. Unknown causes accounted for 23 percent of the kills. Agricultural operations ranked first (22 percent) in the number of reported fish kills. This category includes pesticides, manure-silage drainage, and fertilizers. Municipal operations ranked second (20 percent). This category includes sewerage systems, power, refuse disposal and water systems. Industrial operations ranked third (17 percent) in the number of reported fish kills. This category

Figure 1

Percentage of Fish Kills Reported in United States, by Cause - 1976

Figure 1 summarizes as percentages the reported fish kill incidents which were identified with a pollution source-type of operation during 1976.

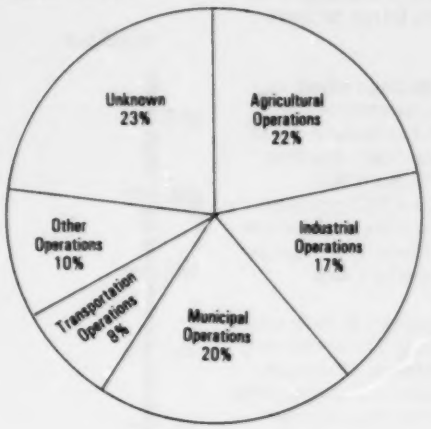


Table 2 summarizes all reported fish kills and the number of fish killed in 1976 by major and individual pollution sources. Kills attributed to natural causes are not included.

1971		1972		1973		1974		1975		1976	
46		50		50		50		50		50	
860		760		749		721		624		667	
759		697		703		648		543		601	
73,670,000		17,717,000		37,814,000		19,052,000		16,111,210		13,611,049	
6,154		4,639		5,527		6,532		3,879		4,509	
5,500,000		2,922,000		10,000,000		47,112,000		10,000,000		4,800,000	
132		113		161		145		118		151	
231		189		196		168		122		112	
162		167		146		169		90		133	
52		56		65		40		47		50	
64		72		56		74		78		67	
219		163		125		125		169		154	
860		760		749		721		624		667	
No reports	No fish (millions)	No reports	No fish (millions)	No reports	No fish (millions)	No reports	No fish (millions)	No reports	No fish (millions)	No reports	No fish (millions)
28	63.0	6	8.97	6	29.53	6	107.6	3	12.0	3	8.83
26	6.37	27	5.43	19	4.65	20	7.1	9	1.87	10	2.15
124	3.33	81	2.60	88	2.74	110	3.6	65	1.62	81	1.96
266	0.86	216	0.62	251	0.81	187	0.6	173	0.57	183	0.57
315	0.10	367	0.09	339	0.09	325	0.1	293	0.07	323	0.09
101		63		46		73		81		67	
	3.35		3.40		2.72		3.58		2.18		3.18

Table 2—Fish Kill Summary by Source of Pollution—1976

Source of pollution	Total reports	Reports specifying number of fish killed	
		No. of reports	No. of fish
Agricultural			
Insecticides	103	79	389,544
Fertilizers	17	17	108,834
Manure-silage drainage	31	30	142,230
Subtotal	151	126	640,608
Industrial			
Mining	16	15	61,830
Food products	14	13	87,345
Paper products	4	2	8,500
Chemicals	26	23	268,463
Petroleum	21	19	18,669
Metals	9	8	12,543
Combinations	2	2	25,844
Other	20	16	106,086
Subtotal	112	98	589,280
Municipal			
Sewerage systems	104	102	8,975,814
Refuse disposal	7	6	1,112,589
Water systems	12	11	44,234
Swimming pool	3	2	3,055
Power	7	5	156,760
Subtotal	133	126	10,292,452
Transportation			
Rail	10	8	56,015
Truck	22	22	334,806
Barge or boat	2	2	5,200
Pipeline	16	14	183,837
Subtotal	50	46	579,858
Other operations:	67	62	642,646
Unknown	154	143	866,205
Total	667	601	13,611,049

includes chemicals, petroleum, mining, food products, paper products, and metals. Transportation operations accounted for 8 percent of the kills. This category includes truck, barge or boat, pipeline, and rail.

The 13.6 million fish reported killed in 1976 brought the total number of fish killed (Figure 2) to 482.2 million in 7,802 separate incidents since 1961, the first full year of reporting. These 7,802 separate incidents, plus 1,673 reported incidents which did not state the number of fish killed, brought the total incidents for the 1961–1975 period to 9,475.

A total of 43 States reported at least one fish kill incident (Table 3). The remaining seven states (Alaska, Maine, Michigan, New York, South Dakota, Tennessee, and Vermont) stated they had no recorded incident of pollution-caused fish kills occurring in 1976. The State of Ohio continued to submit the largest number of annual reports (115). Ohio accounted for 17 percent of the total reported incidents in 1976.

Figure 2
Cumulative Reported Fish Killed, 1961–1976

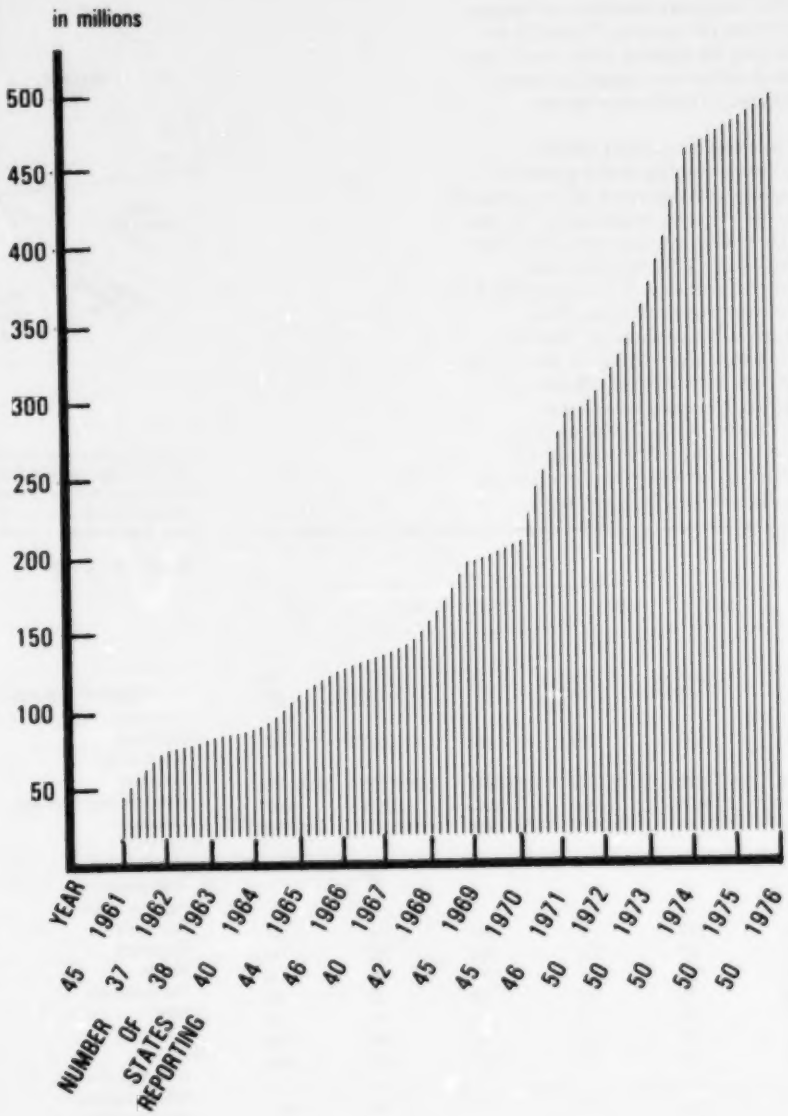


Figure 2 shows that over 482 million fish were reported killed by pollution over a 16-year period. This graph summarizes the reported number of fish killed for the 1961–1976 period. The first reporting year, 1960 was excluded since the reports included only the last six months of that year.

Table 3 summarizes data from the 43 States which reported one or more pollution-caused fish kill incidents. Of the 667 reports submitted, 601 indicated the number of fish killed. The remaining 66 reports did not specify the number of fish killed. Table 3 also shows the number of reports for incidents that occurred in rivers, lakes, and coastal waters.

Table 3—Pollution Caused Fish Kill Summary by State, 1976

State	Reports specifying number of fish killed			Number of reports and water surfaces affected					
				River		Lake		Coastal waters*	
	Total reports	Number of reports	Number of fish	Number of reports	Number of miles	Number of reports	Number of acres	Number of reports	Number of miles
Alabama	11	11	438,464	9	54	2	10		
Arizona	1	1	3,666	1	1				
Arkansas	7	4	208,477	7	52				
California	78	77	413,084	47	121	30	895	1	
Colorado	2	2	4,814	2	6				
Connecticut	19	17	247,565	13	11	4	11	2	
Delaware	5	5	3,201,370	2	3	1	17	2	5
Florida	20	19	287,195	8	14	6	53	6	24
Georgia	23	18	51,749	20	65	3	5		
Hawaii	3	3	3,080	3	3				
Idaho	7	6	25,110	6	5	1	1		
Illinois	22	22	521,658	17	64	5	36		
Indiana	31	30	4,860,648	29	244	2	3		
Iowa	4	4	5,600	4	14				
Kansas	27	27	145,700	18	52	9	589		
Kentucky	18	16	127,062	18	45				
Louisiana	8	7	15,300	8	17				
Maryland	11	11	37,057	7	108	3	22	1	30
Massachusetts	3	3	23,500	2	2	1	234		
Minnesota	1	1	200			1	2		
Mississippi	2	2	4,450	2	23				
Missouri	26	24	80,656	20	33	6	22		
Montana	4	4	30,850	4	10				
Nebraska	8	7	7,146	4	14	4	4		
Nevada	1			1	1				
New Hampshire	3	2	8,900	3	5				
New Jersey	18	18	50,575	11	17	7	43		
New Mexico	1			1	12				
North Carolina	9	7	24,371	8	488	1			
North Dakota	1	1	200			1			
Ohio	115	115	1,851,248	114		1			
Oklahoma	41	19	17,829	14	15	27	27		
Oregon	20	19	59,068	18	30	2	2		
Pennsylvania	32	31	96,257	31	51	1	5		
Rhode Island	1					1	8		
South Carolina	7	6	38,966	2	8	5	7		
Texas	31	25	554,852	25	51	4	5	2	
Utah	1			1	3				
Virginia	17	16	95,786	17	57				
Washington	9	3	32,000	4	8	3	210	2	3
West Virginia	13	13	33,796	13	31				
Wisconsin	4	4	2,000	4	4				
Wyoming	2	1	800	1	2	1	182		
Total	667	601	13,611,049	519	1,744	132	2,393	16	62

*Includes embayments such as Chesapeake, San Francisco, and Galveston Bays.

Major Fish Kills

In 1976, 13 kills were reported in which the number of dead fish equaled or exceeded 100,000 each, accounting for 80 percent of the 13.6 million fish killed by pollution (Table 4). Three of these kills involved more than a million fish each. The largest single kill occurred in the West Fork of the White River, near Indianapolis, Indiana, accounting for 4.8 million fish. This single kill, caused by a sewerage system, accounted for 35 percent of the reported fish killed in 1976.

Table 4—Major Kills—100,000 or Over--1976

Lake or stream	Near or in	State	Number of fish	Operation
State Hatchery	Eastaboga	Alabama	109,632	Poisons
Industrial Ca	Mobile	Alabama	206,210	Sewerage system
Mckinney Cr	Franklin Co	Arkansas	178,551	Truck transportation
Cottonwood Cr	Cottonwood	California	160,000	Other operations
Housatonic R	Milford	Connecticut	200,000	Sewerage system
Rehoboth Bay	Angola	Delaware	225,000	Other operations
White Cr	Millville	Delaware	2,952,154	Sewerage system
Watson Bayou	Panama City	Florida	242,150	Sewerage sysem
Queens La	New Memphis	Illinois	170,197	Pipeline transportation
W FK White R	Indianapolis	Indiana	4,800,000	Sewerage system
Great Miami R	Butler Co	Ohio	1,078,047	Refuse disposal
Lake Erie	Lake Co	Ohio	150,000	Power
Tres Palacios Ba	Matagorda Co	Texas	509,750	Unknown

Table 4 lists the 13 major fish kill incidents occurring in 1976 in which 100,000 or more fish were killed in each incident. Also listed is the lake or stream name, the nearest town or country, the state, the number of fish killed and the operation responsible for each kill.

Fish Killed, by Type of Water Body

The largest number of fish kill incidents occurred in river waters as compared to coastal or lake waters (Table 5). Almost two-thirds (8.8 million) of the total fish reported killed died in rivers, while 29 percent (3.9 million) died in coastal waters and 5 percent (748,418) died in lakes.

Table 5—Fish Kill Summary by Type of Water Body, 1976

				Reports specifying extent of area affected					
				River		Lake		Coastal waters*	
Type of water body	Total reports	Numer of reports	Number of fish	Number of reports	Miles	Number of reports	Acres	Number of reports	Miles
River	519	478	8,870,647	519	1,744				
Lake	132	109	748,418			132	2,393		
Coastal waters*	16	14	3,991,984					16	62
Total	667	601	13,611,049	519	1,744	132	2,393	16	62

*Includes embayments such as Chesapeake, San Francisco, and Galveston Bays.

Table 5 summarizes the reported fish kill incidents and the number of fish killed in 1976 by type of water body (river, lake, and coastal waters), and the extent of the area reportedly affected (miles or acres). The mileage and acreage figures cannot always be accurately estimated, so care should be exercised in their use.

Fish Kills, By Month

The greatest number of reports (53 percent) were submitted during the summer months from June through September (Table 6). The greatest number of fish (7 million, 51 percent) were reported killed during that season. However, November led all months in total fish killed because of the massive fish kill reported in Indiana (4.8 million) which occurred during that month.

Fish Kills, by Duration and Severity

Not all reports indicate the duration of the reported kills. In 1976, 46 percent (308 reports) indicated the duration of the kill, with an average of 3.2 days (Table 7), an increase of 1 day per average duration over that of 1975. In 1976, the longest pollution incident (64 days) occurred in Louisiana as a result of condenser water discharge from sugar mills (Appendix A).

The severity of a fish kill is reported as "complete", "heavy", "moderate", or "light" (Table 7). A total of 98 "complete" kills were reported, averaging 7,631 fish killed per report. "Heavy" kills averaging 5,441 fish were reported on 204 occasions. "Moderate" kills were reported on 104 occasions averaging 2,504 fish per kill. "Light" kills were reported on 100 occasions, averaging 1,047 fish per kill. The severity was not reported on 161 occasions averaging 4,966 fish killed.

Table 6—Fish Kill Summary by Month, 1976

Month	Total reports	Reports specifying number of fish killed: Number of reports	Number of fish
January	15	13	21,737
February	42	30	264,876
March	42	30	94,018
April	64	58	369,786
May	72	69	328,644
June	87	84	475,718
July	87	76	1,999,723
August	91	85	447,551
September	84	79	4,098,965
October	36	35	431,463
November	30	27	5,038,888
December	17	15	39,680
Total	667	601	13,611,049

Table 6 summarizes the reported fish kills and the number of fish killed by month.

Table 7 summarizes the estimated severity and the reported duration of fish kills, their average size, and the number and percent of reports for the different pollution sources.

Regional Summary of Reported Fish Kills

Table 8 summarizes the reported number of pollution-caused fish kill incidents by pollution source operation within each Environmental Protection Agency Region. This table permits the comparison of the frequency of reported incidents in different sections of the United States.

Region I supports a large number of small privately owned metal factories that are located in communities along the streams throughout New England. This fact is reflected in the number of reported fish kills that have identified the metal industry as a leading cause of fish kills in New England.

Regions II and III contain the Appalachian coal mining areas of Maryland, Pennsylvania and West Virginia and the large concentration of chemical industries along the Delaware River. These industries are among the leading sources of reported fish kills in these Regions.

Region IV has enjoyed economic growth in the agricultural industry, expansion in the manufacturing industry and an influx of population because of increased employment opportunities. These economic developments are manifested by the number of fish kill reports that identify agricultural operations and municipal sewerage systems as the leading sources of pollution.

Region V contains, along the shores of the Great Lakes, one of the nation's more heavily populated and industrialized areas. Municipal sewerage systems

Table 7—Fish Kill Summary by Duration and Severity of Kill, 1976

Severity of kill	Number of reports	Average Kill**	Duration of Kill: No.	Duration of Kill: Average (days)*	Agricultural: No.	Agricultural: Percent	Industrial: No.	Industrial: Percent	Municipal: No.	Municipal: Percent	Transportation: No.	Transportation: Percent	Other Operations: No.	Other Operations: Percent	Unknown: No.	Unknown: Percent
Complete kill	98	7,631	70	4.71	22	14	18	16	20	15	14	28	10	14	14	9
Heavy kill	204	5,441	126	2.75	61	40	30	26	37	27	10	20	20	29	46	29
Moderate kill	104	2,504	56	2.70	25	16	18	16	20	15	3	6	10	14	29	18
Light kill	100	1,047	50	2.82	16	10	19	17	9	6	13	26	13	19	30	19
Not stated	161	4,966	6	1.67	27	17	27	24	47	35	10	20	14	20	35	22
Total	667	4,509	308	3.18	151	100	112	100	133	100	50	100	67	100	154	100

*Includes all fish killed as reported plus an allowance computed for reports which did not indicate the number of fish that died.
**Derived after excluding 13 reports of 100,000 kills or more.

account for the greatest number of reported fish kills within this Region.

Regions VI through X are less densely populated than most of the eastern regions and are also more dependent on agricultural activities. As a result, the fish kill reports from these regions cite pesticides used in agriculture as the most frequent cause of fish kill incidents.

State Summary of Reported Fish Kills - 1976

Figures 3 through 45 are individual state maps with appropriate symbols that identify the locations and sizes of the reported fish kills. The pie charts display the fish kills as a percentage by operation for each state.

Table 8—Number of Fish Kill Reports by Source of Pollution Within EPA Regions, 1976*

Source of pollution:	EPA Regions										
	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Agricultural:											
Pesticides		1	4	14	11	32	18	2	14	7	103
Fertilizers					8	1	4		2	2	17
Manure-silage drainage	1	1		2	18	2	5	1		1	31
Subtotal	1	2	4	16	37	35	27	3	16	10	151
Industrial:											
Mining			9	1	2	1	1	1	1		16
Food products			2	2	6	2	1			1	14
Paper products						2			1	1	4
Chemicals		2	8	3	3	4	1		3	2	26
Petroleum			4	2	6	6	2		1		21
Metals	3				6						9
Combinations					2						2
Other	1		3	4	5	3	1		1	2	20
Subtotal	4	2	26	12	30	18	6	1	7	6	112
Municipal:											
Sewerage systems	4	2	9	17	42	8	16		4	2	104
Refuse disposal					5				1	1	7
Water systems		1	3	3	3				1	1	12
Swimming pool			2	1							3
Power			1		3		2			1	7
Subtotal	4	3	15	21	53	8	18		6	5	133
Transportation:											
Rail				3	3		1		1	2	10
Truck		2	6	4	4	1	1	1	2	1	22
Barge or boat						1	1				2
Pipeline			2		6	6			1	1	16
Subtotal		2	8	7	13	8	3	1	4	4	50
Other Operations:	4	6	14	10	11	1	4	3	11	3	67
Unknown:	13	3	11	24	29	18	7	2	39	8	154
Total	26	18	78	90	173	88	65	10	83	36	667

REGION I
Connecticut
Maine
Massachusetts
New Hampshire
Rhode Island
Vermont

REGION II
New Jersey
New York

REGION III
Delaware
District of Columbia
Maryland
Pennsylvania
Virginia
West Virginia

REGION IV
Alabama
Florida
Georgia
Kentucky
Mississippi
North Carolina
South Carolina
Tennessee

REGION V
Illinois
Indiana
Michigan
Minnesota
Ohio
Wisconsin

REGION VI
Arkansas
Louisiana
New Mexico
Oklahoma
Texas

REGION VII
Iowa
Kansas
Missouri
Nebraska

REGION VIII
Colorado
Montana
North Dakota
South Dakota
Utah
Wyoming

REGION IX
Arizona
California
Hawaii
Nevada

REGION X
Alaska
Idaho
Oregon
Washington

* Present EPA regions were established in 1971.

Table 8 summarizes the number of reported pollution-caused fish kill incidents by individual source of pollution for each EPA region. As in 1975, Region VIII reported the smallest number of fish kill incidents (10 reports), while Region V (173 reports) led in the number of reported incidents.

Figure 3
State of Alabama—Reported Fish Kills, by Size and Percentages of Causes—1976

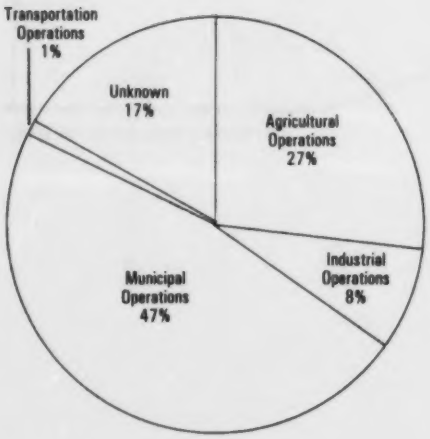
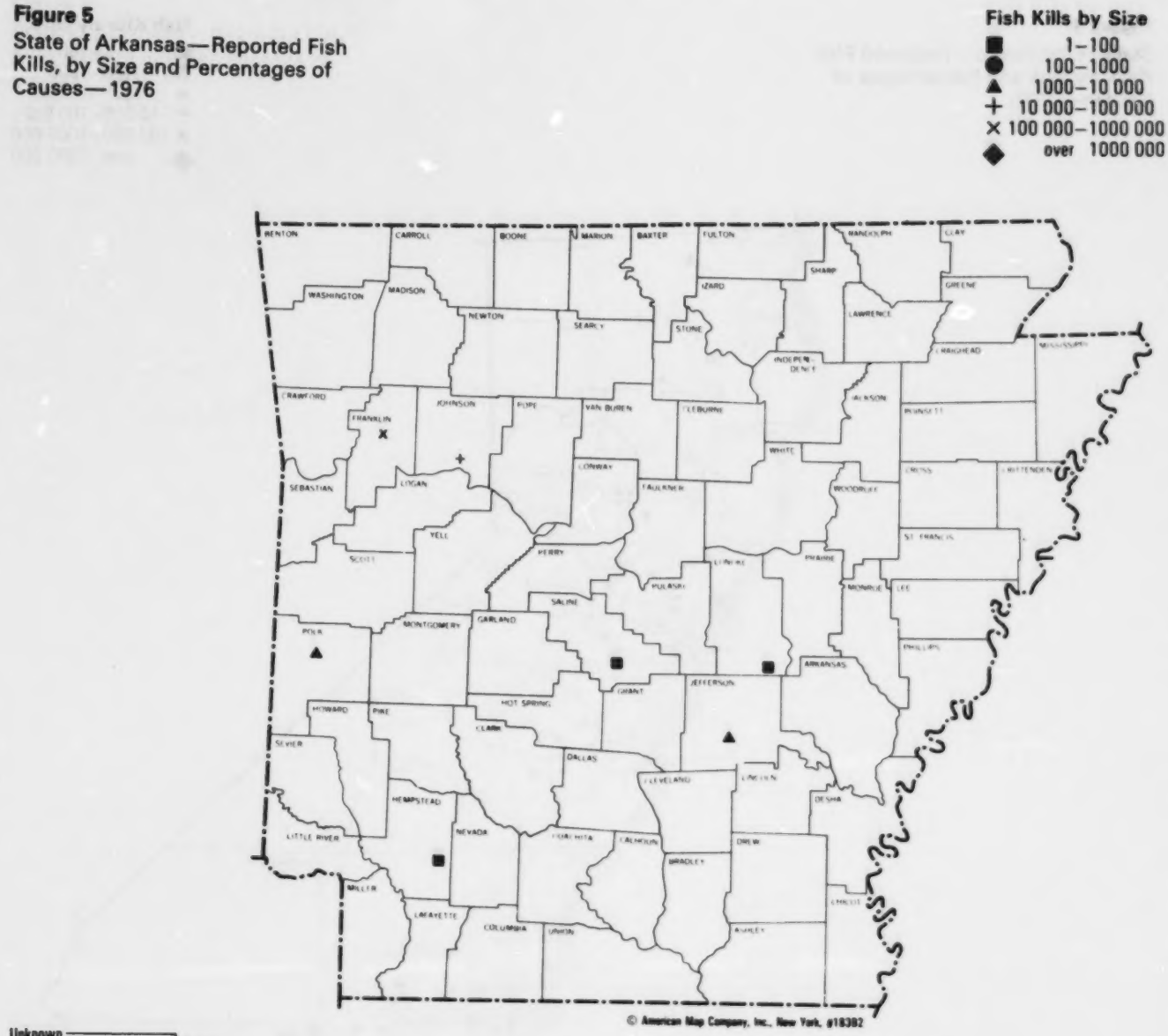


Figure 4
State of Arizona—Reported Fish Kills, by Size and Percentages of Causes—1976

Figure 5
State of Arkansas—Reported Fish Kills, by Size and Percentages of Causes—1976



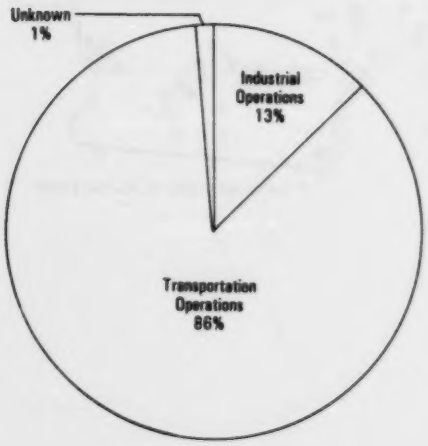
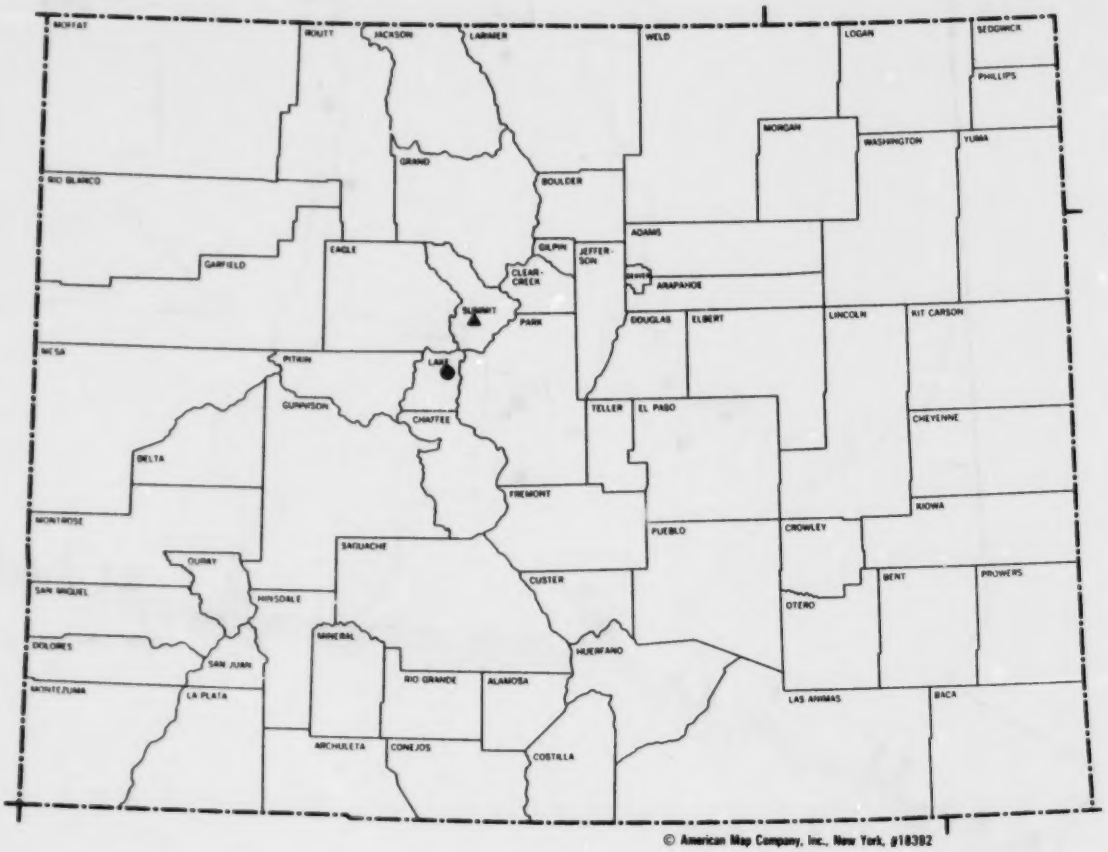


Figure 6
State of California—Reported Fish Kills, by Size and Percentages of Causes—1976

Figure 7
State of Colorado—Reported Fish Kills, by Size and Percentages of Causes—1976

Fish Kills by Size

■	1–100
●	100–1000
▲	1000–10 000
+	10 000–100 000
×	100 000–1000 000
◆	over 1000 000



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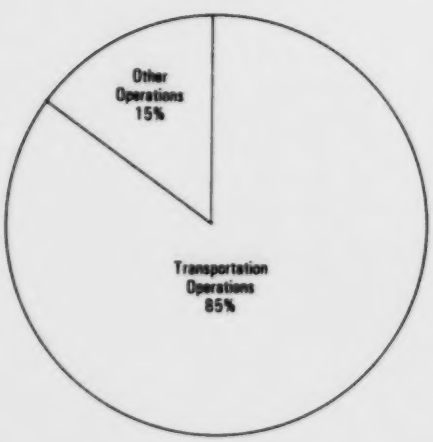
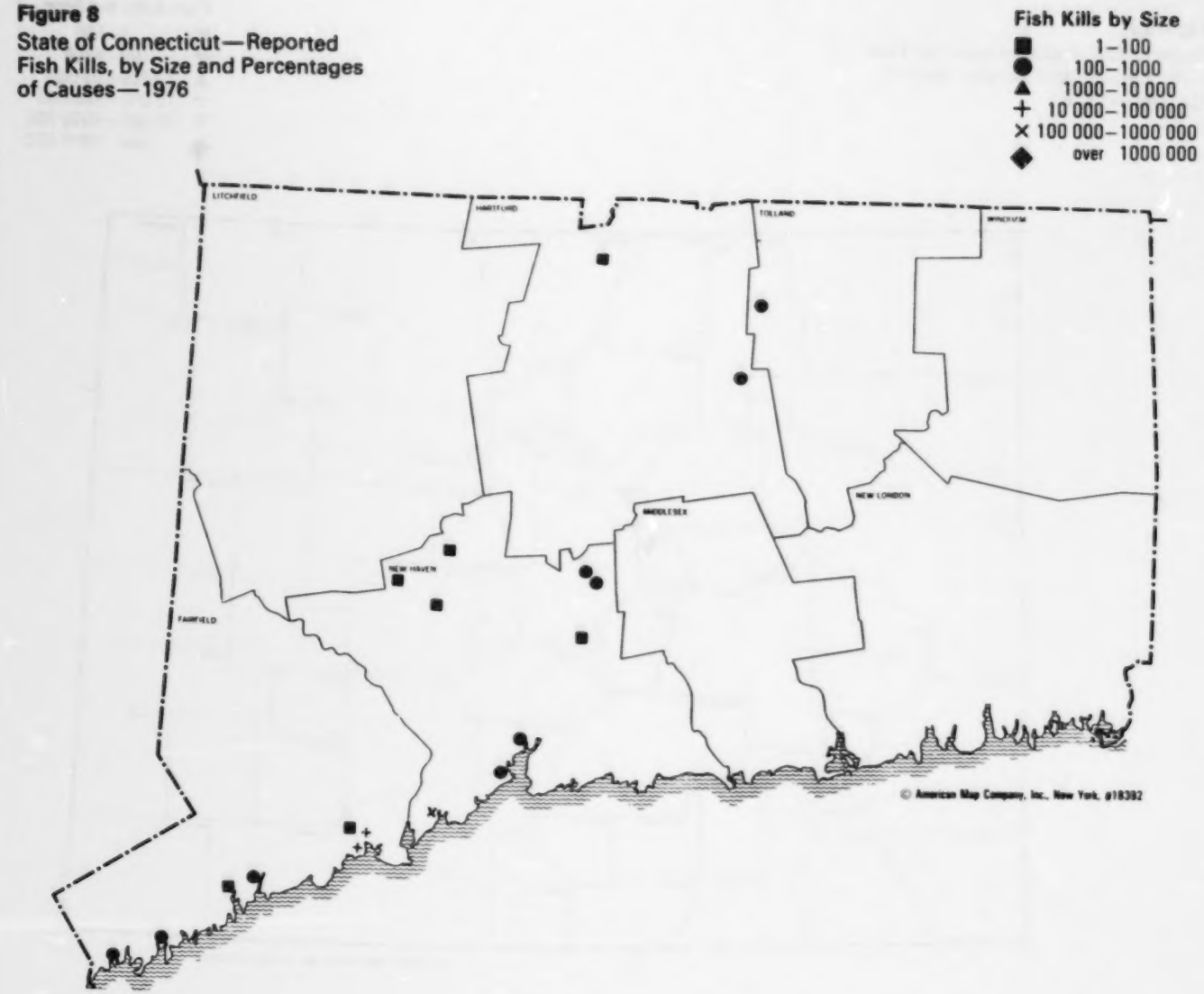


Figure 8
State of Connecticut—Reported Fish Kills, by Size and Percentages of Causes—1976



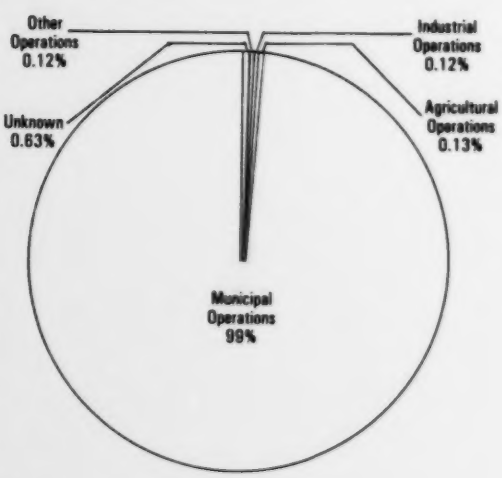


Figure 9
State of Delaware—Reported Fish Kills, by Size and Percentages of Causes—1976

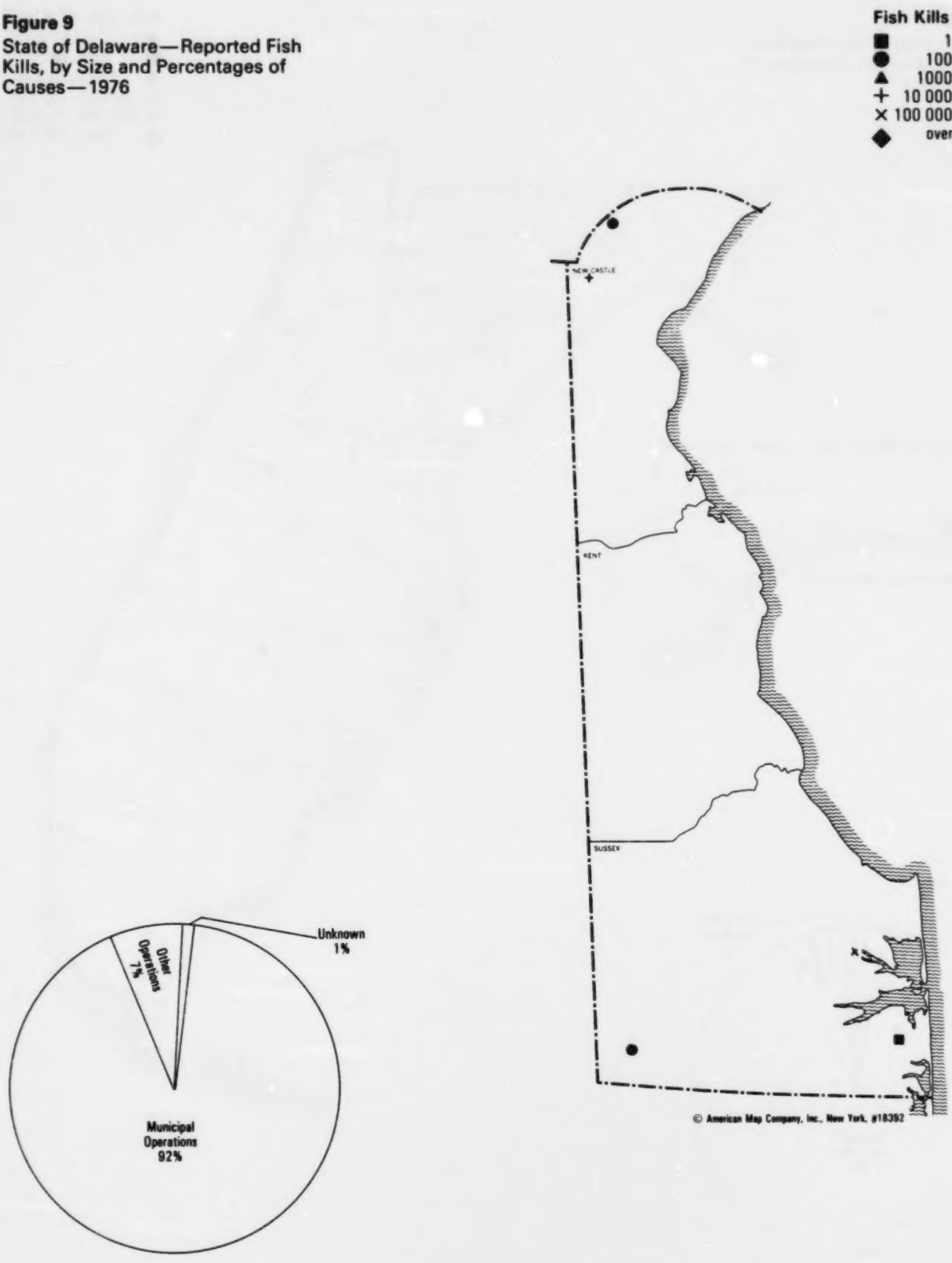


Figure 10
State of Florida—Reported Fish Kills, by Size and Percentages of Causes—1976

Figure 11
State of Georgia—Reported Fish Kills, by Size and Percentages of Causes—1976

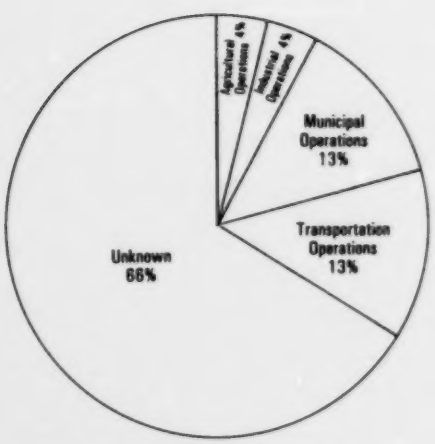


Figure 12
State of Hawaii—Reported Fish Kills, by Size and Percentages of Causes—1976

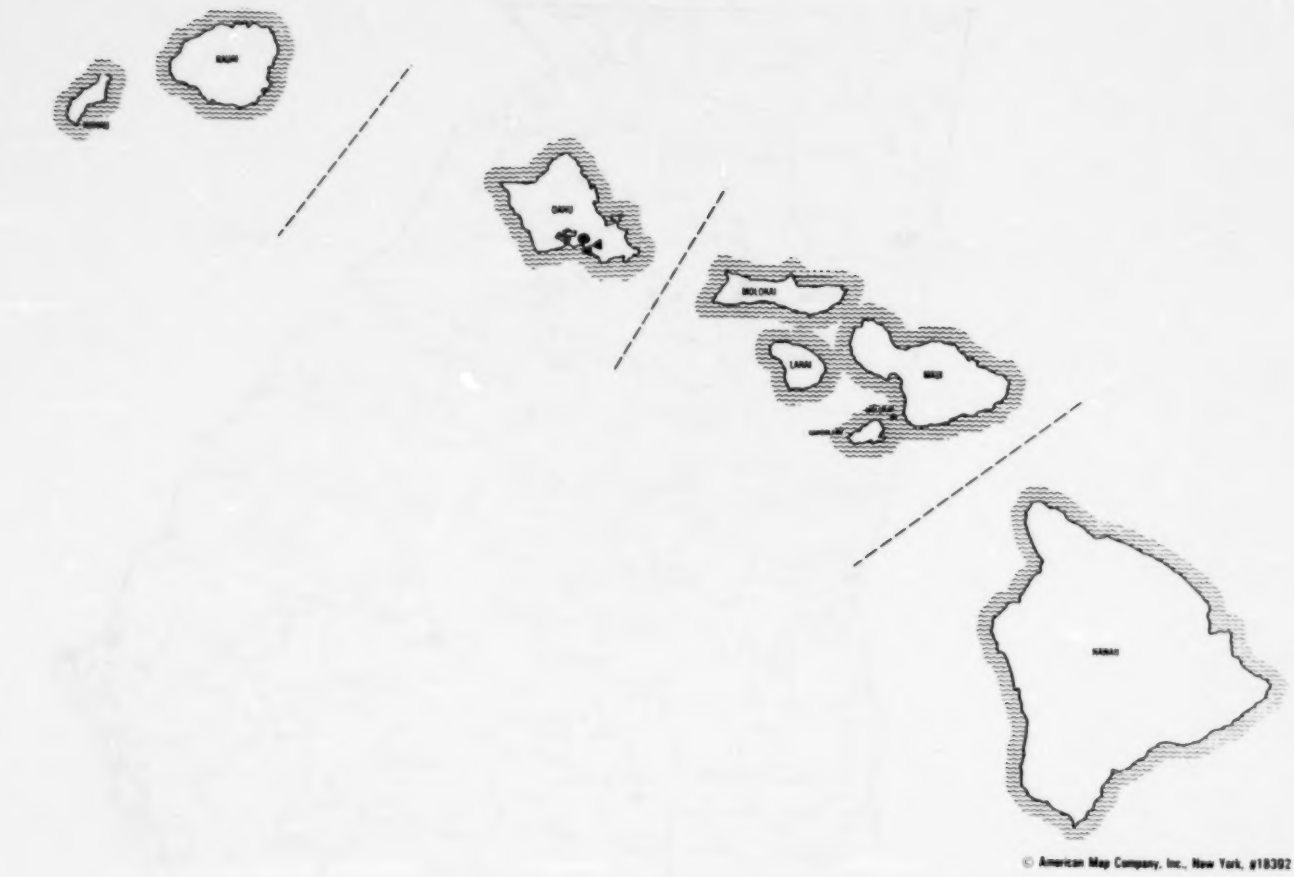
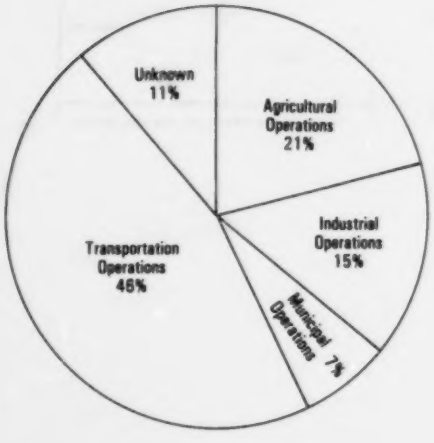


Figure 13
State of Idaho—Reported Fish Kills, by Size and Percentages of Causes—1976

Figure 14
State of Illinois—Reported Fish Kills, by Size and Percentages of Causes—1976



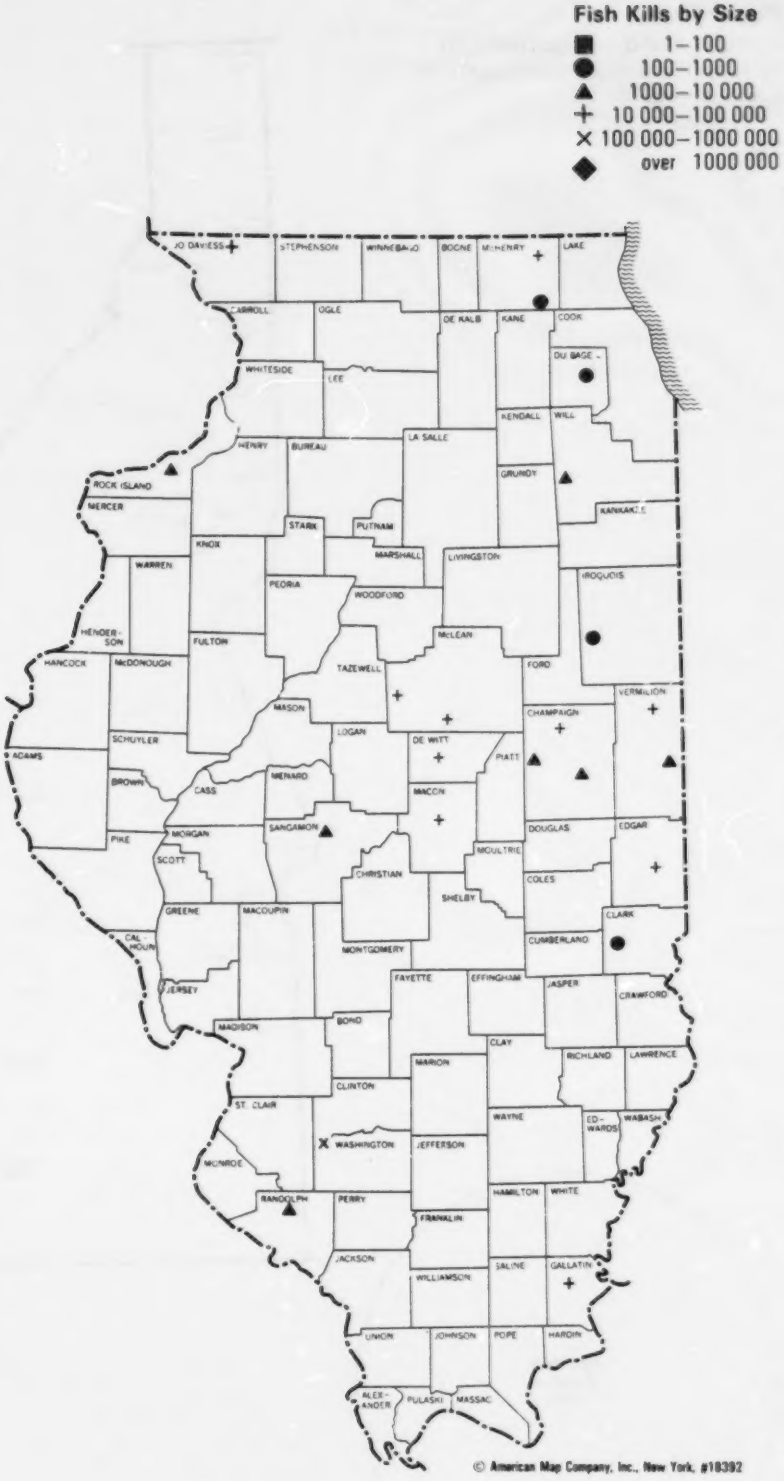


Figure 15
State of Indiana—Reported Fish Kills, by Size and Percentages of Causes—1976

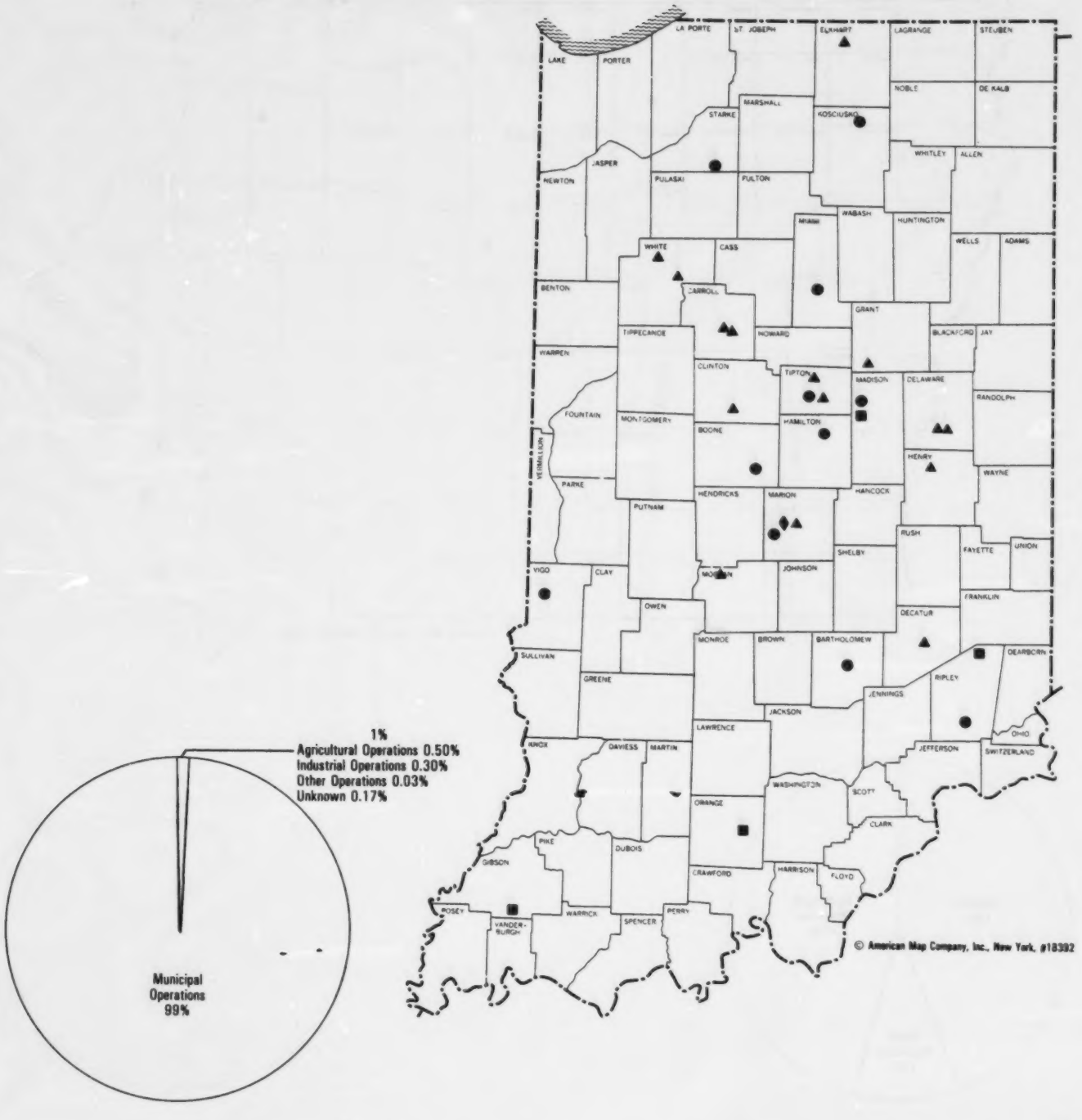
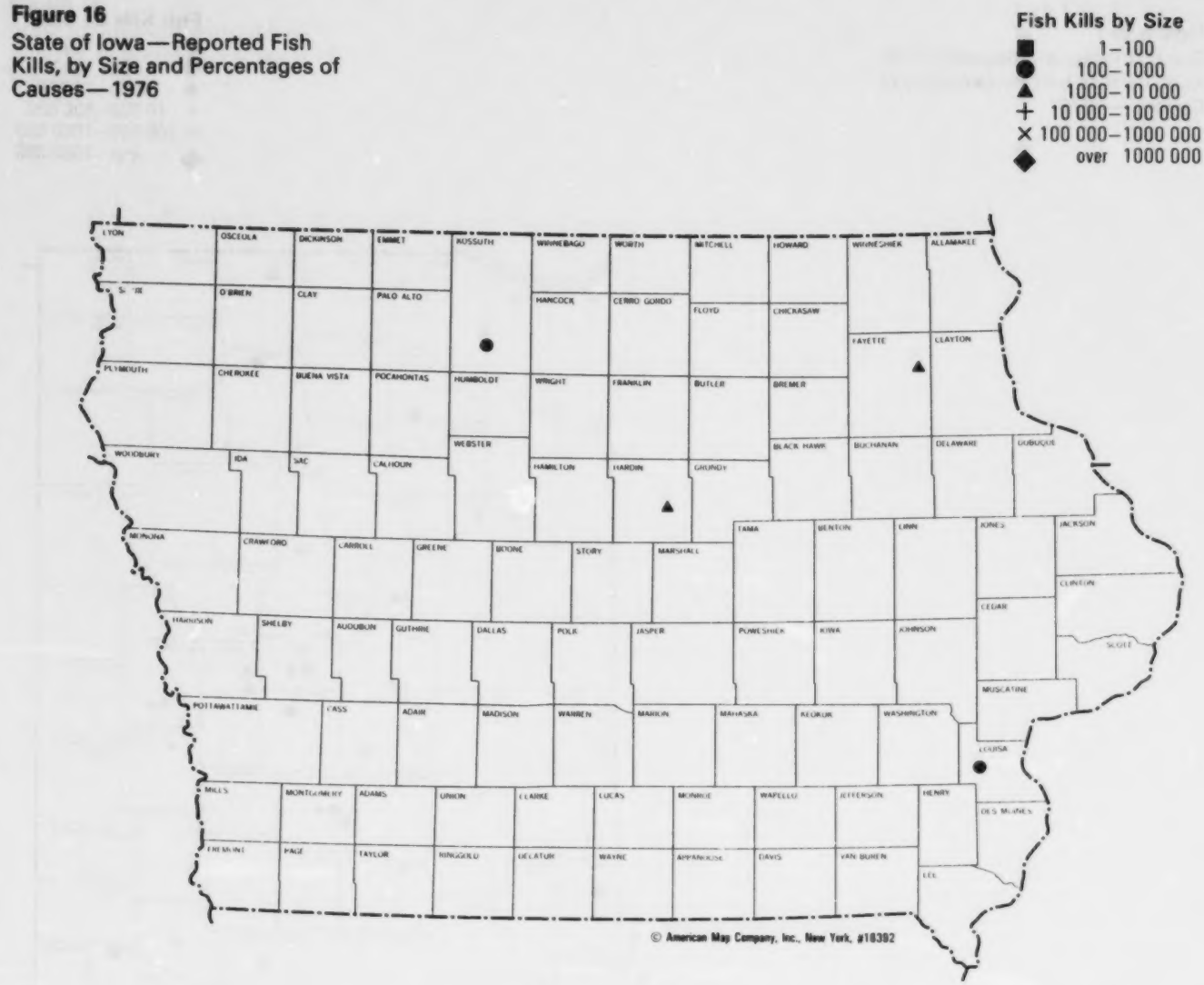


Figure 16
State of Iowa—Reported Fish Kills, by Size and Percentages of Causes—1976



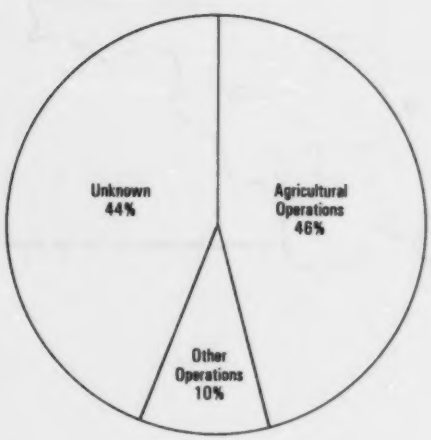
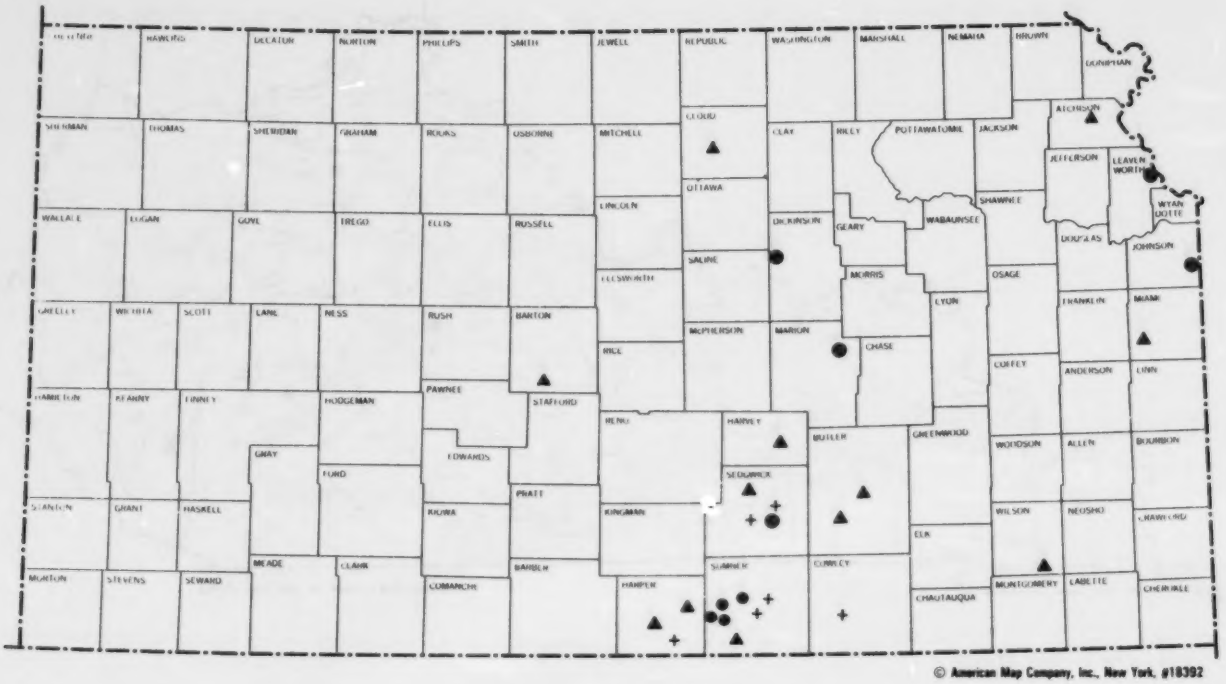


Figure 17
State of Kansas—Reported Fish Kills, by Size and Percentages of Causes—1976



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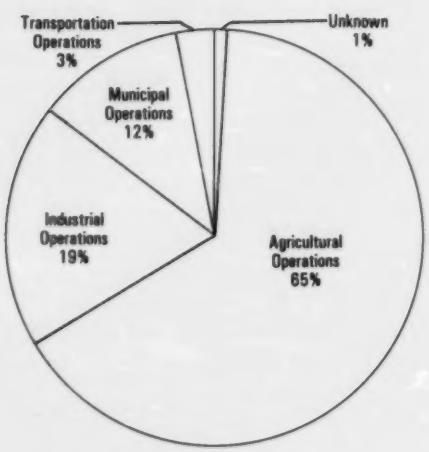
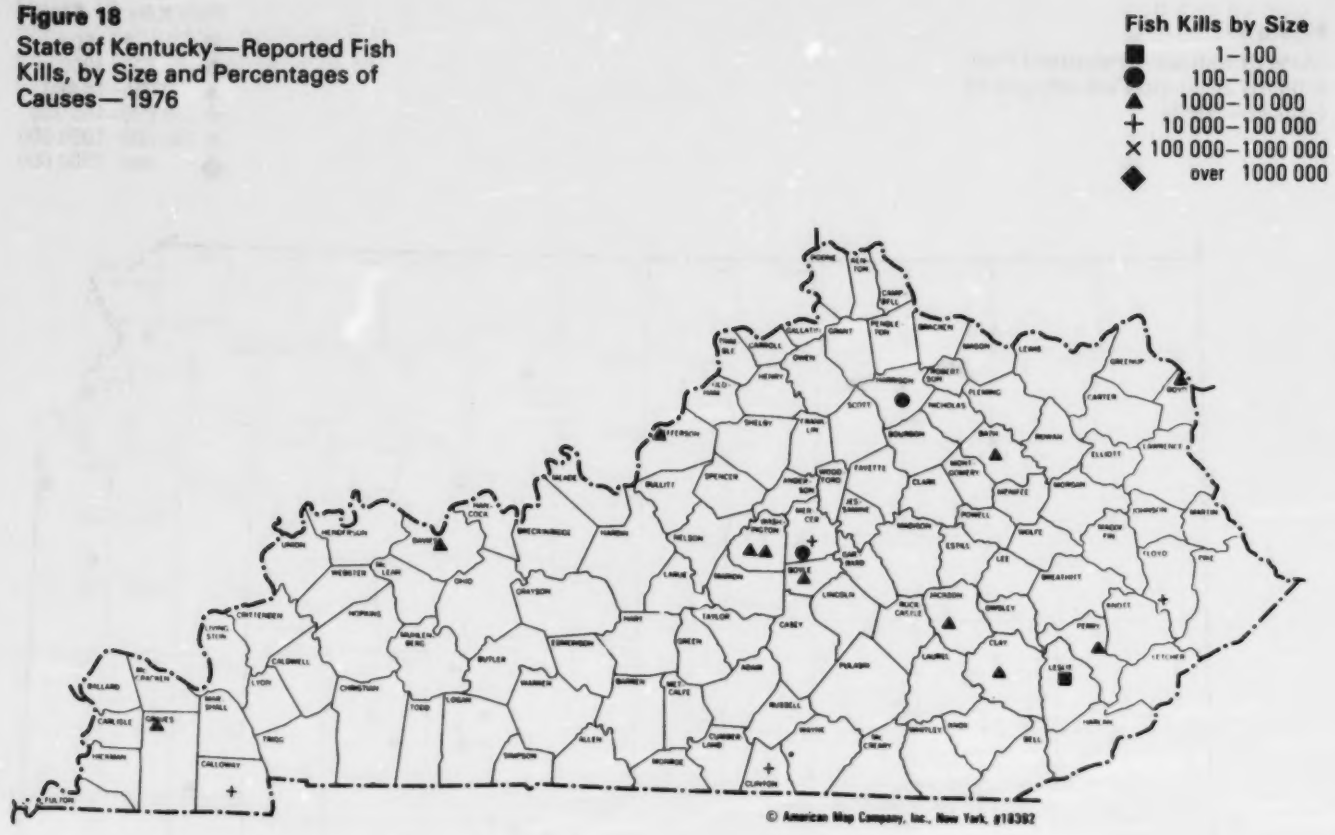


Figure 18
State of Kentucky—Reported Fish Kills, by Size and Percentages of Causes—1976



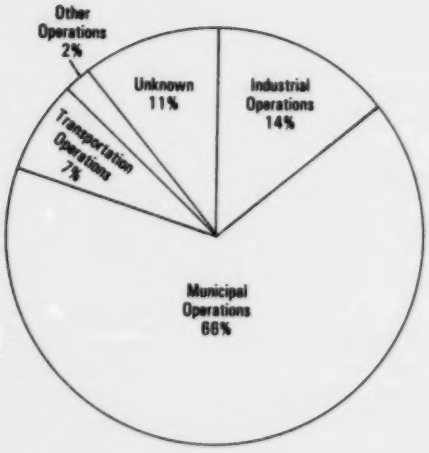


Figure 19
State of Louisiana—Reported Fish Kills, by Size and Percentages of Causes—1976

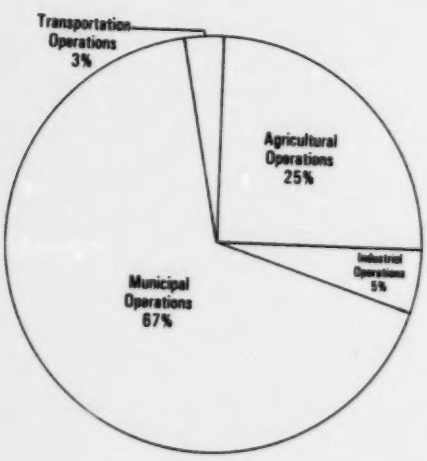
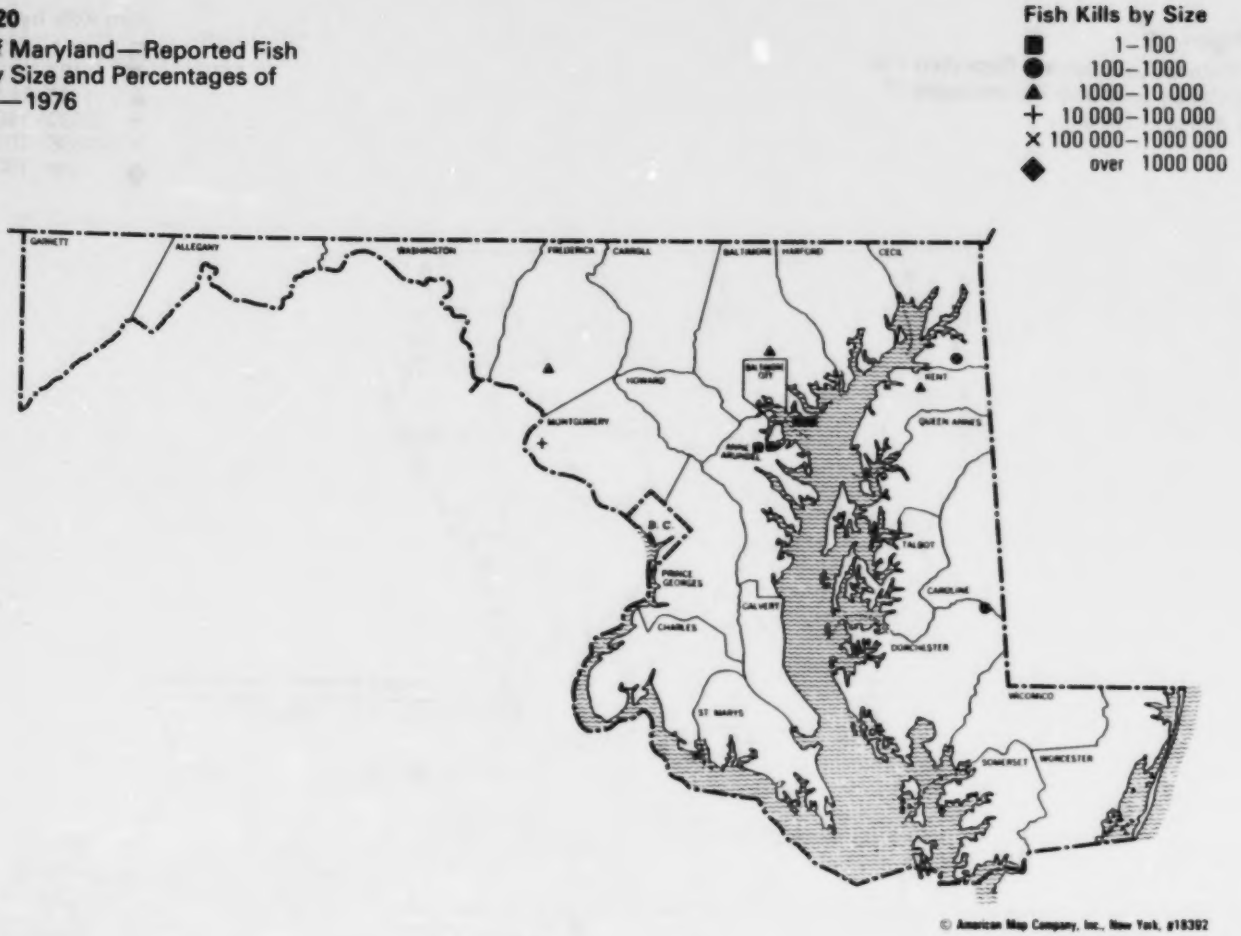


Figure 20
State of Maryland—Reported Fish Kills, by Size and Percentages of Causes—1976



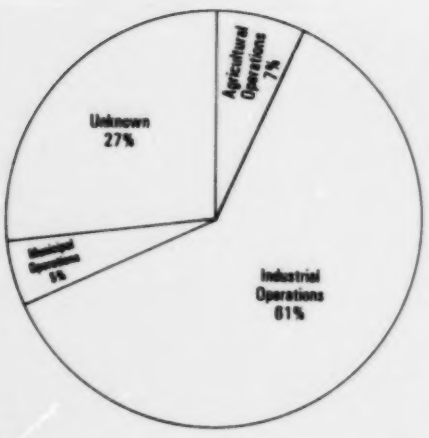
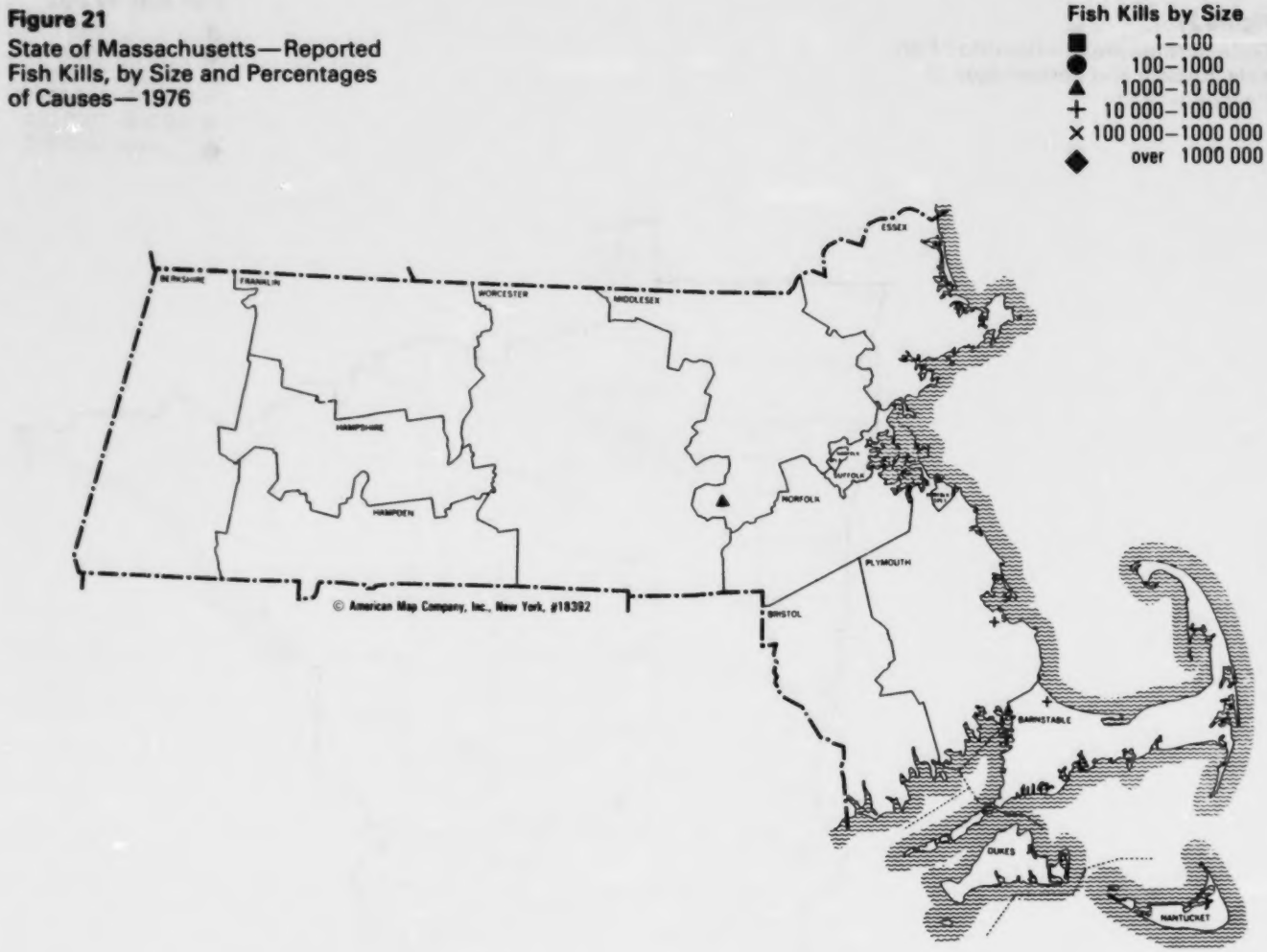


Figure 21
State of Massachusetts—Reported Fish Kills, by Size and Percentages of Causes—1976



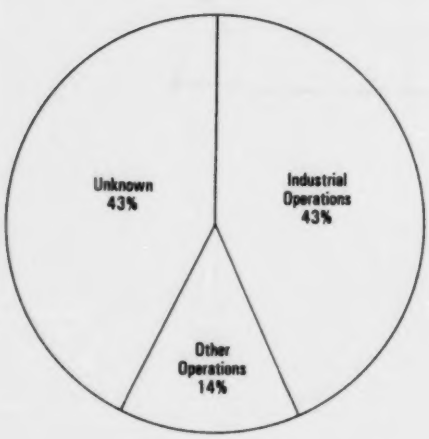


Figure 22
State of Minnesota—Reported Fish Kills, by Size and Percentages of Causes—1976

Figure 23
State of Mississippi—Reported Fish Kills, by Size and Percentages of Causes—1976

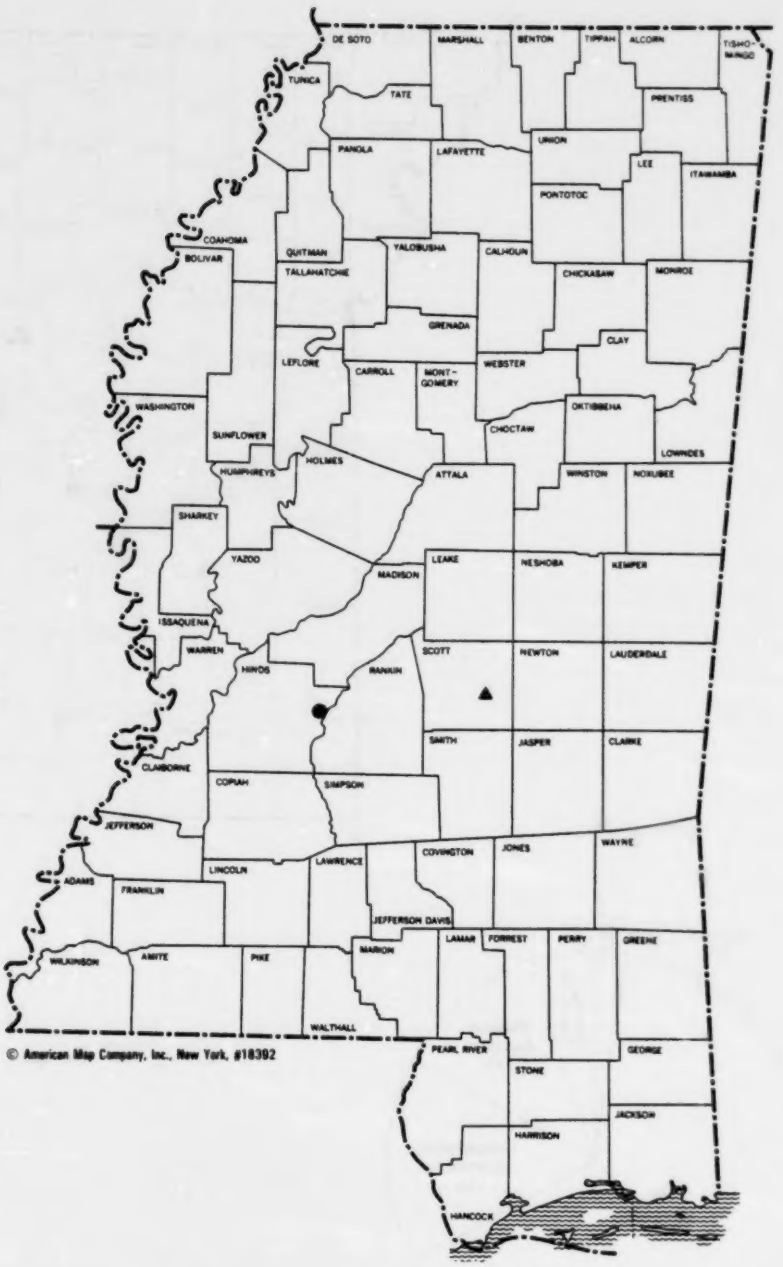


Figure 24
State of Missouri—Reported Fish Kills, by Size and Percentages of Causes—1976

Fish Kills by Size

- ■ 1–100
- ● 100–1000
- ▲ 1000–10 000
- \+ 10 000–100 000
- × 100 000–1000 000
- ◆ over 1000 000

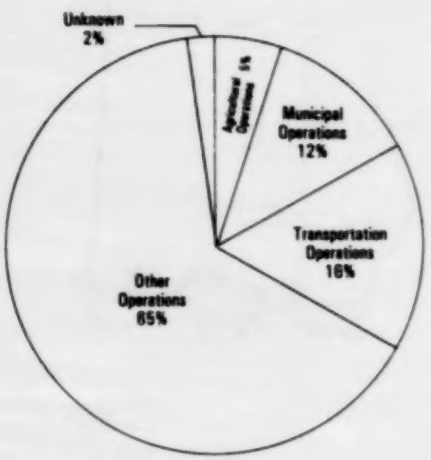
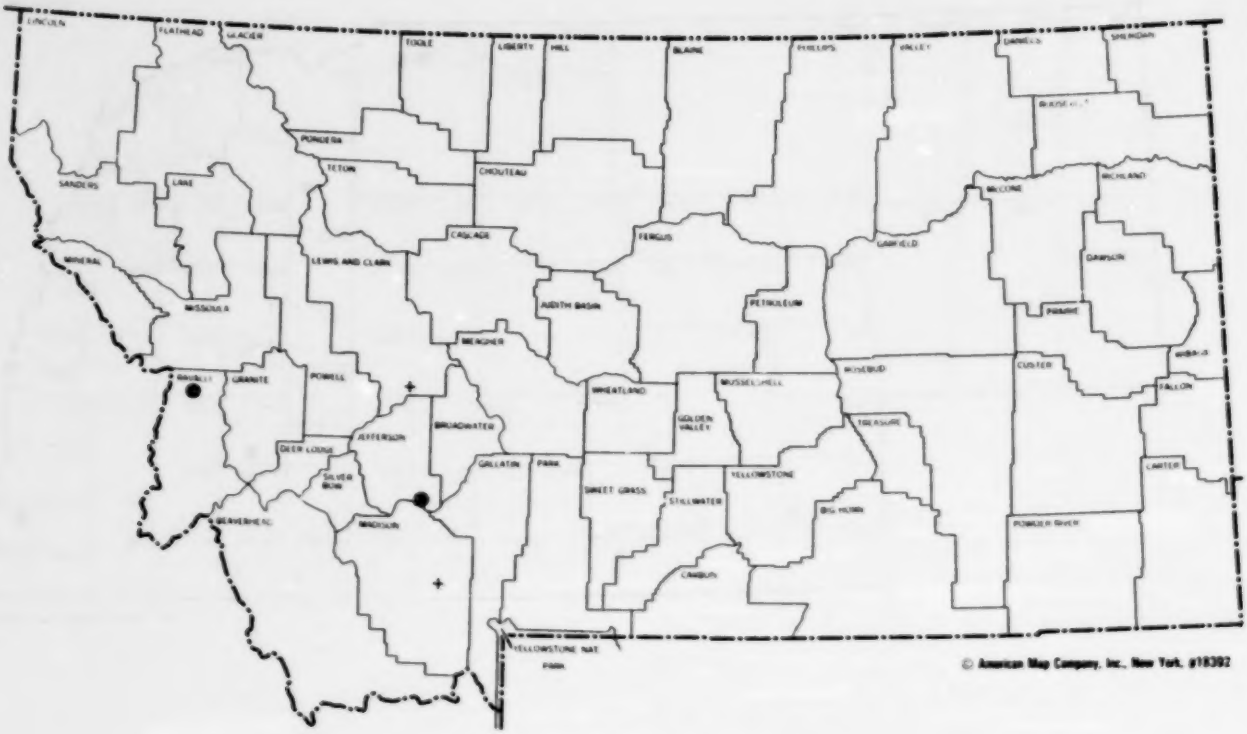


Figure 25
State of Montana—Reported Fish Kills, by Size and Percentages of Causes—1976



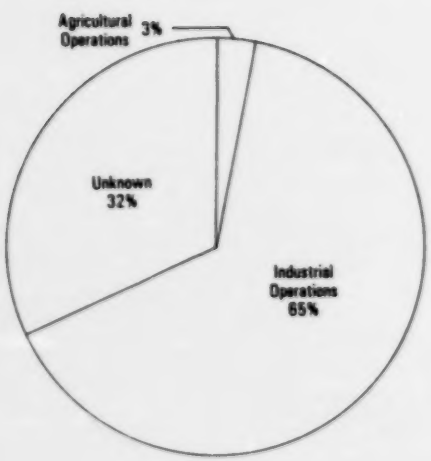
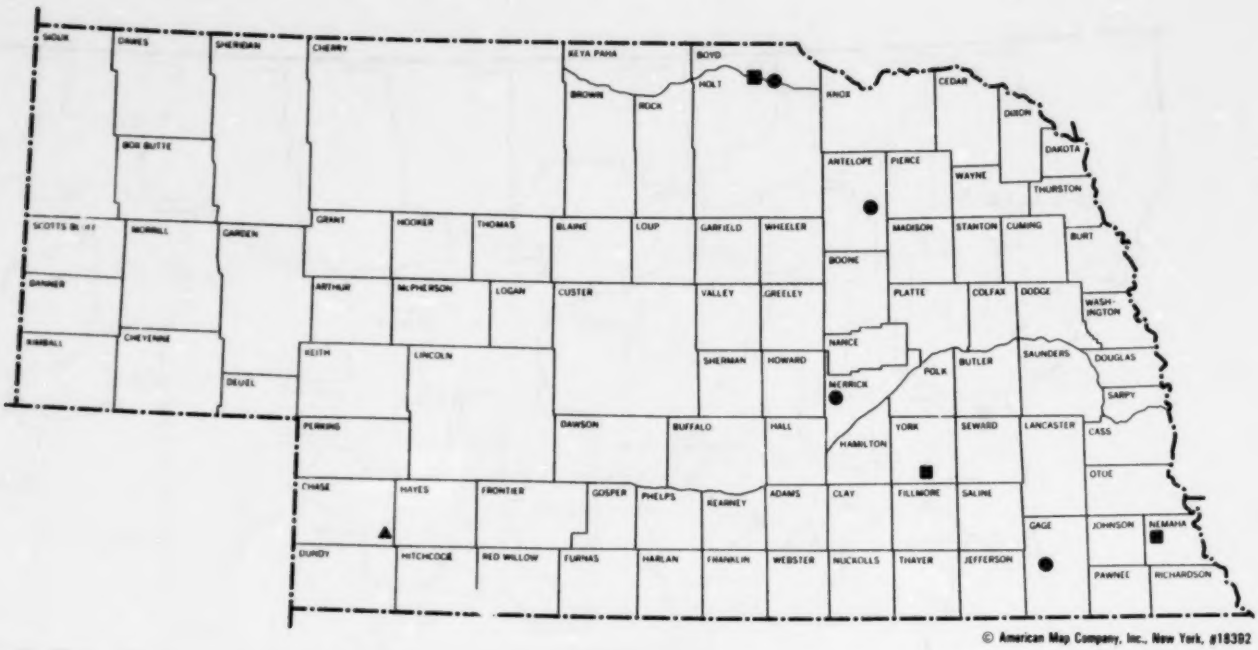


Figure 26
State of Nebraska—Reported Fish Kills, by Size and Percentages of Causes—1976



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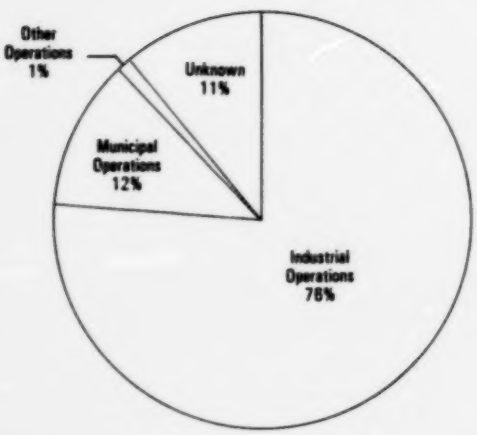


Figure 27
State of Nevada—Reported Fish Kills, by Size and Percentages of Causes—1976

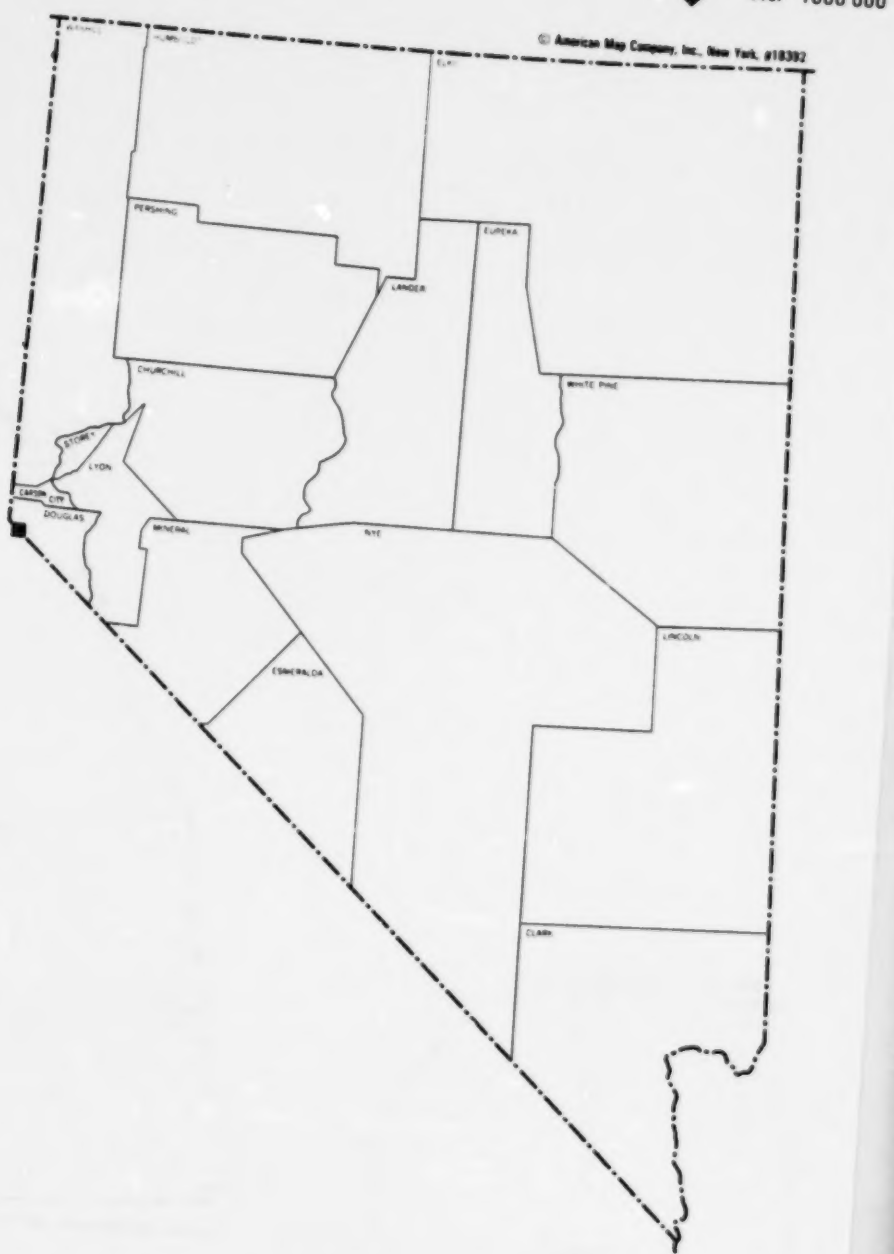


Figure 28
State of New Hampshire—Reported Fish Kills, by Size and Percentages of Causes—1976

Figure 29
State of New Jersey—Reported Fish Kills, by Size and Percentages of Causes—1976

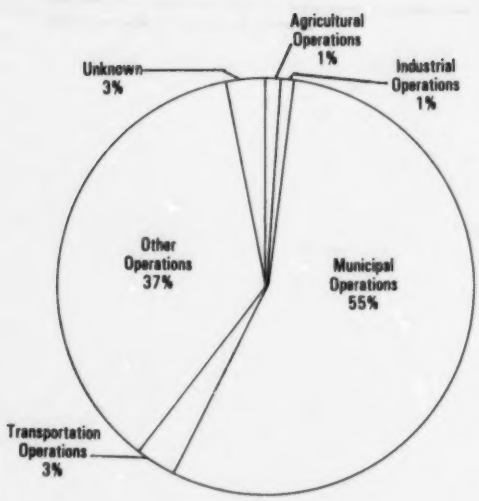


Figure 30
State of New Mexico—Reported Fish Kills, by Size and Percentages of Causes—1976

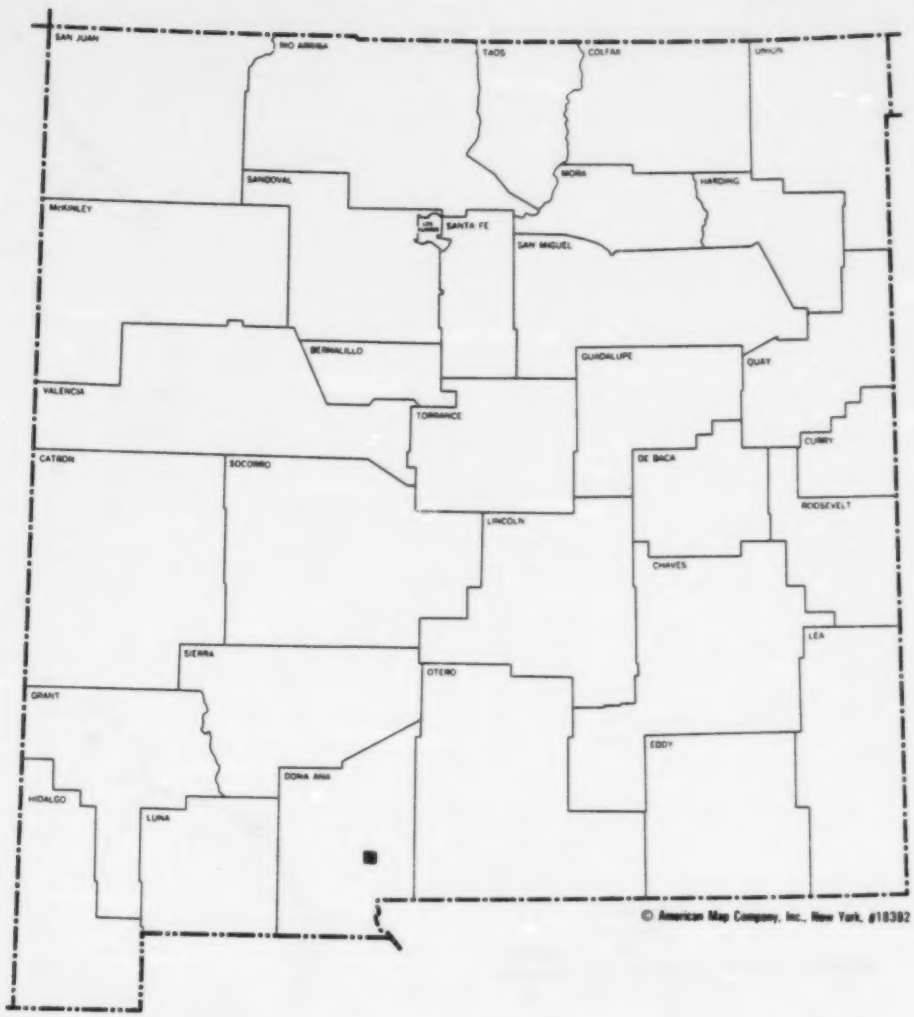


Figure 31
State of North Carolina—Reported Fish Kills, by Size and Percentages of Causes—1976

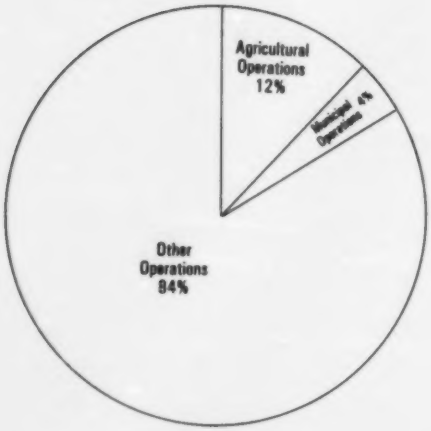
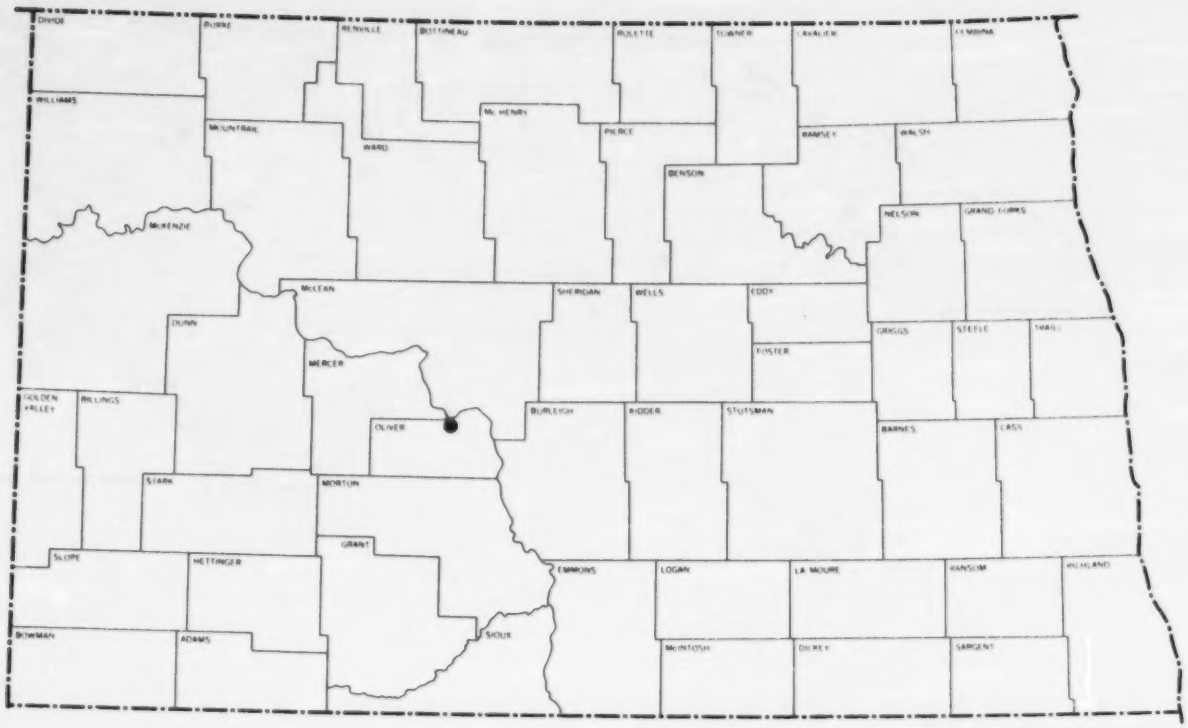


Figure 32
State of North Dakota—Reported Fish Kills, by Size and Percentages of Causes—1976

Fish Kills by Size

- ■ 1–100
- ● 100–1000
- ▲ 1000–10 000
- \+ 10 000–100 000
- × 100 000–1000 000
- ◆ over 1000 000



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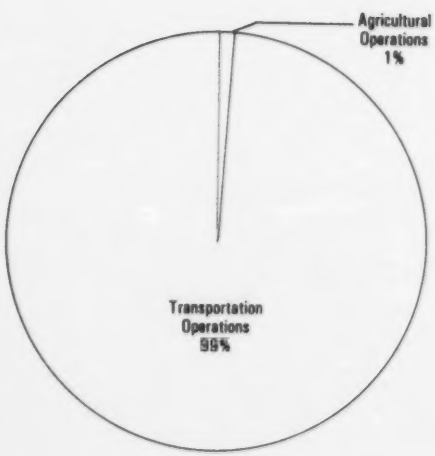


Figure 33
State of Ohio—Reported Fish Kills, by Size and Percentages of Causes—1976

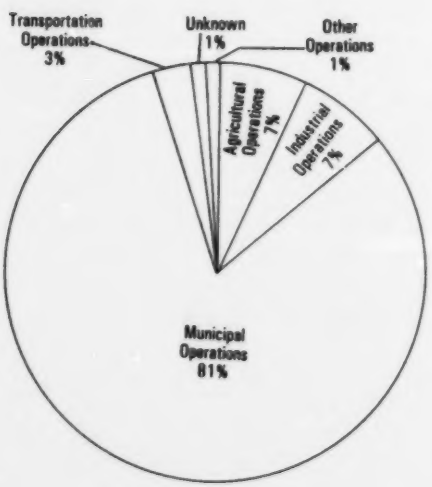
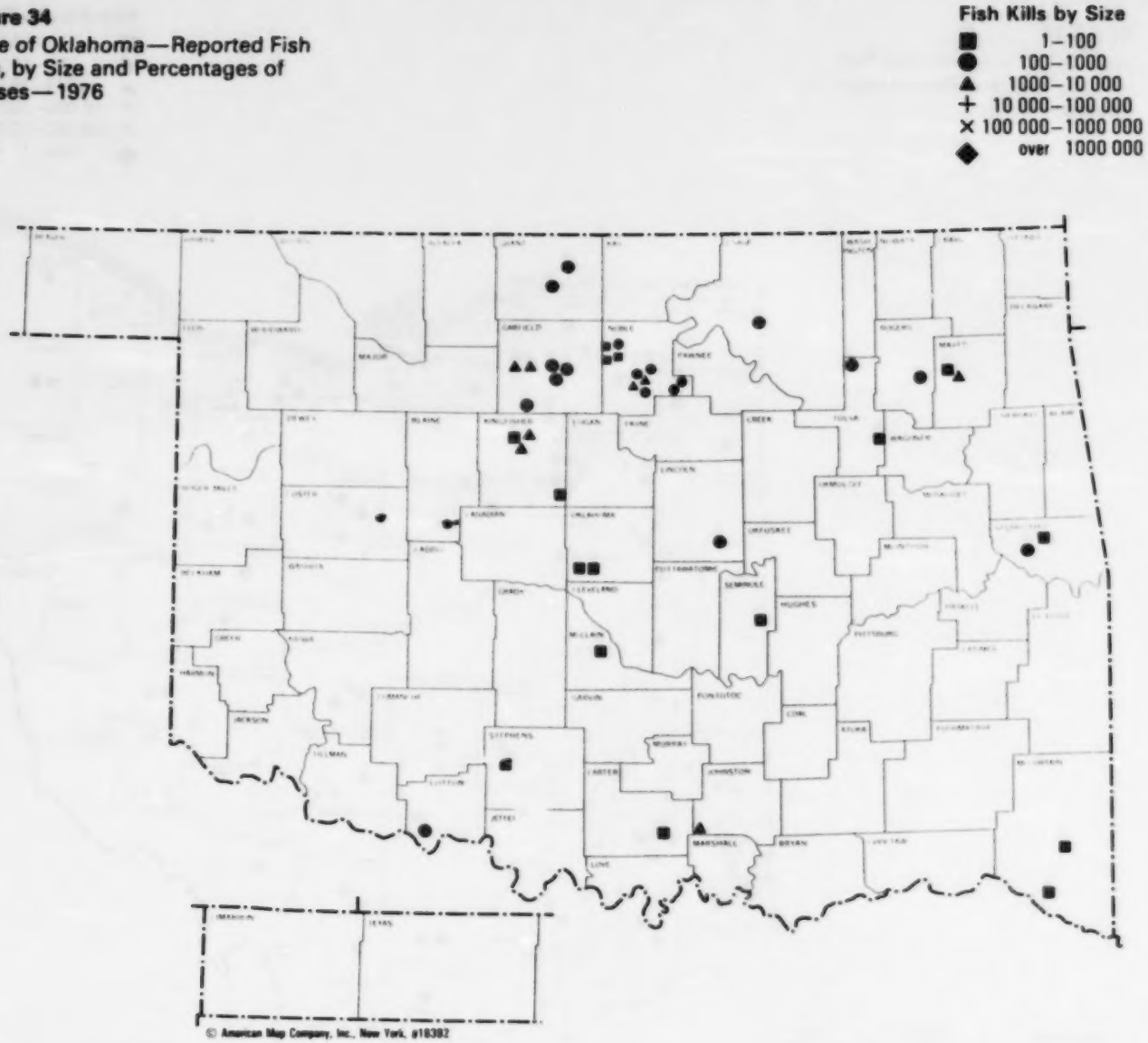


Figure 34
State of Oklahoma—Reported Fish Kills, by Size and Percentages of Causes—1976



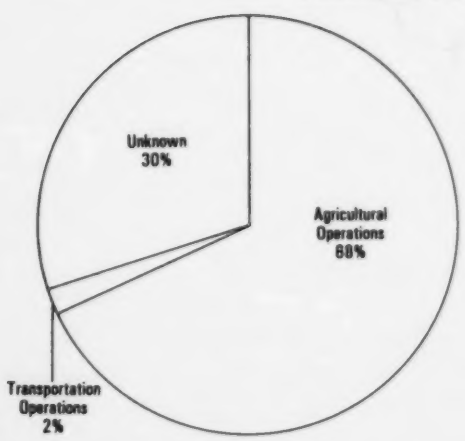
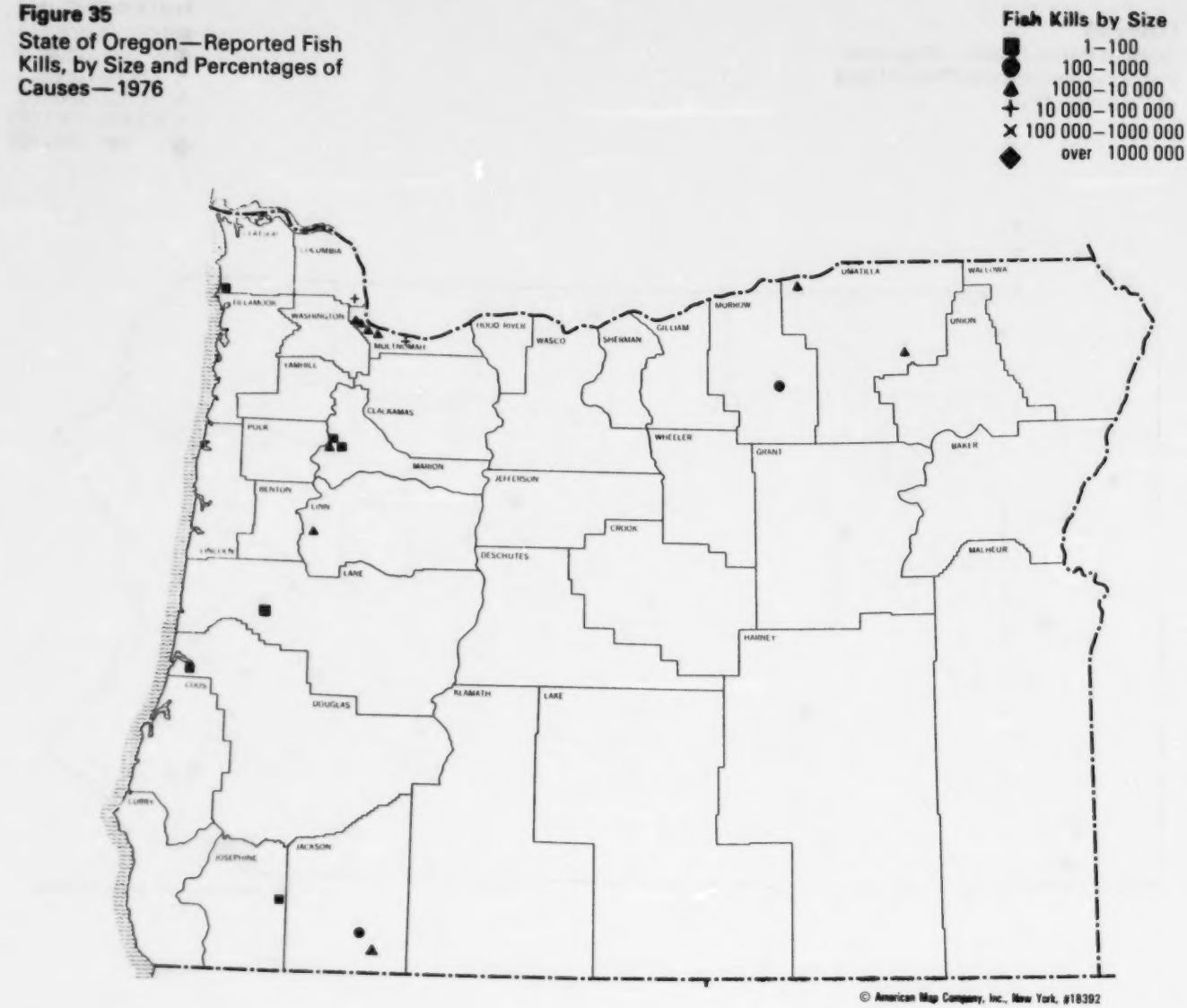


Figure 35
State of Oregon—Reported Fish Kills, by Size and Percentages of Causes—1976



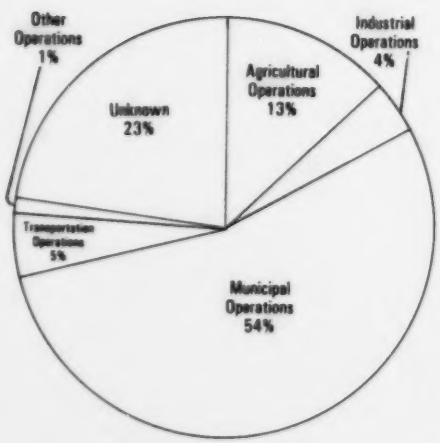
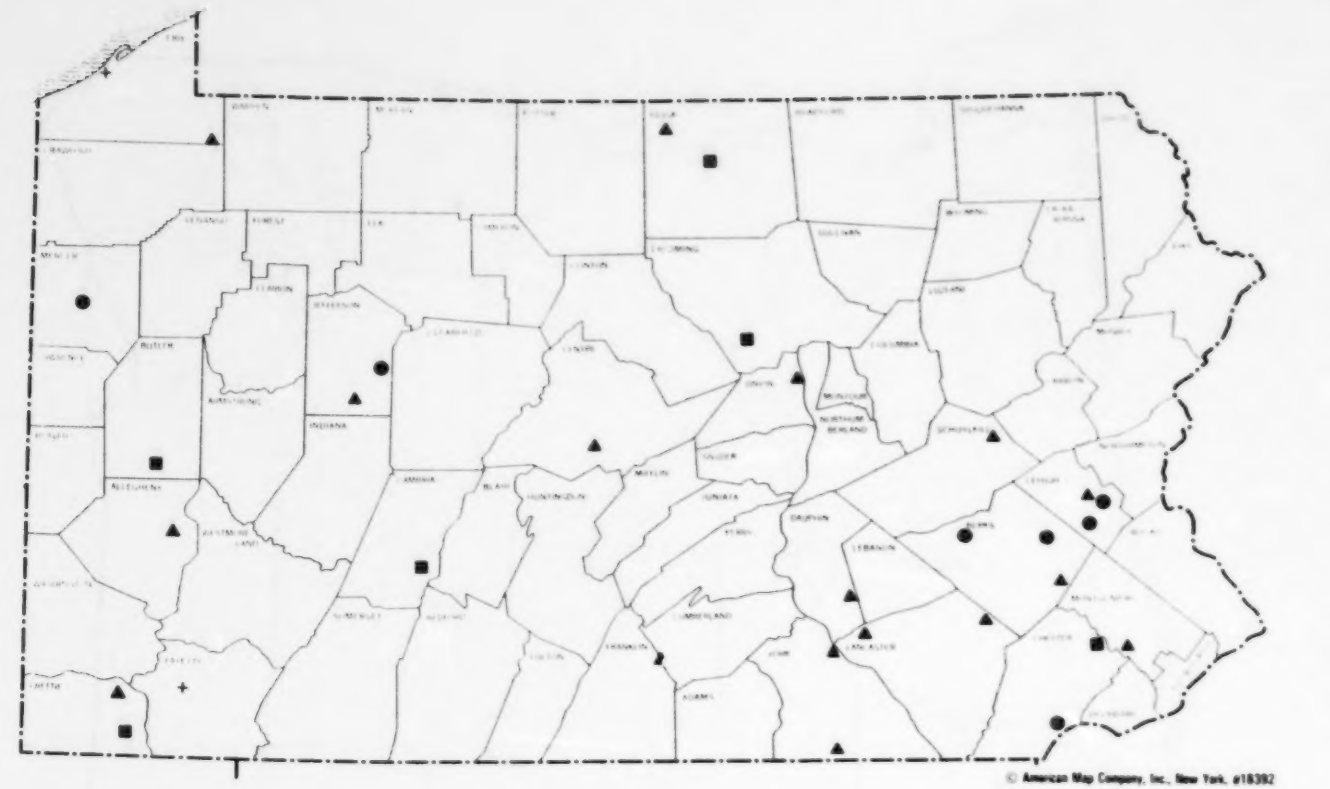


Figure 36
State of Pennsylvania—Reported Fish Kills, by Size and Percentages of Causes—1976



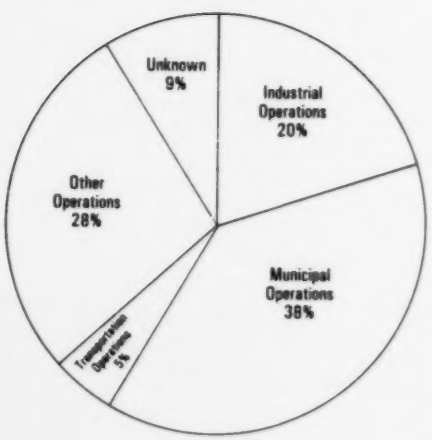


Figure 37
State of Rhode Island—Reported Fish Kills, by Size and Percentages of Causes—1976

Figure 38
State of South Carolina—Reported Fish Kills, by Size and Percentages of Causes—1976

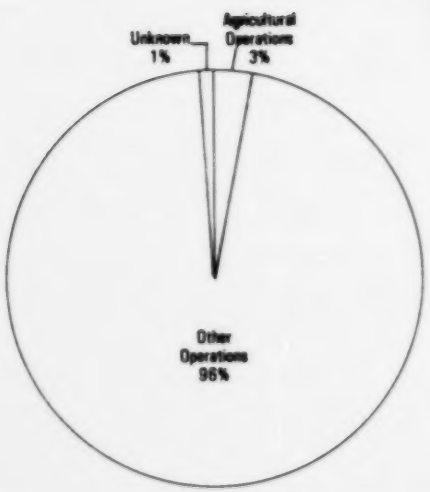


Figure 39
State of Texas—Reported Fish Kills, by Size and Percentages of Causes—1976

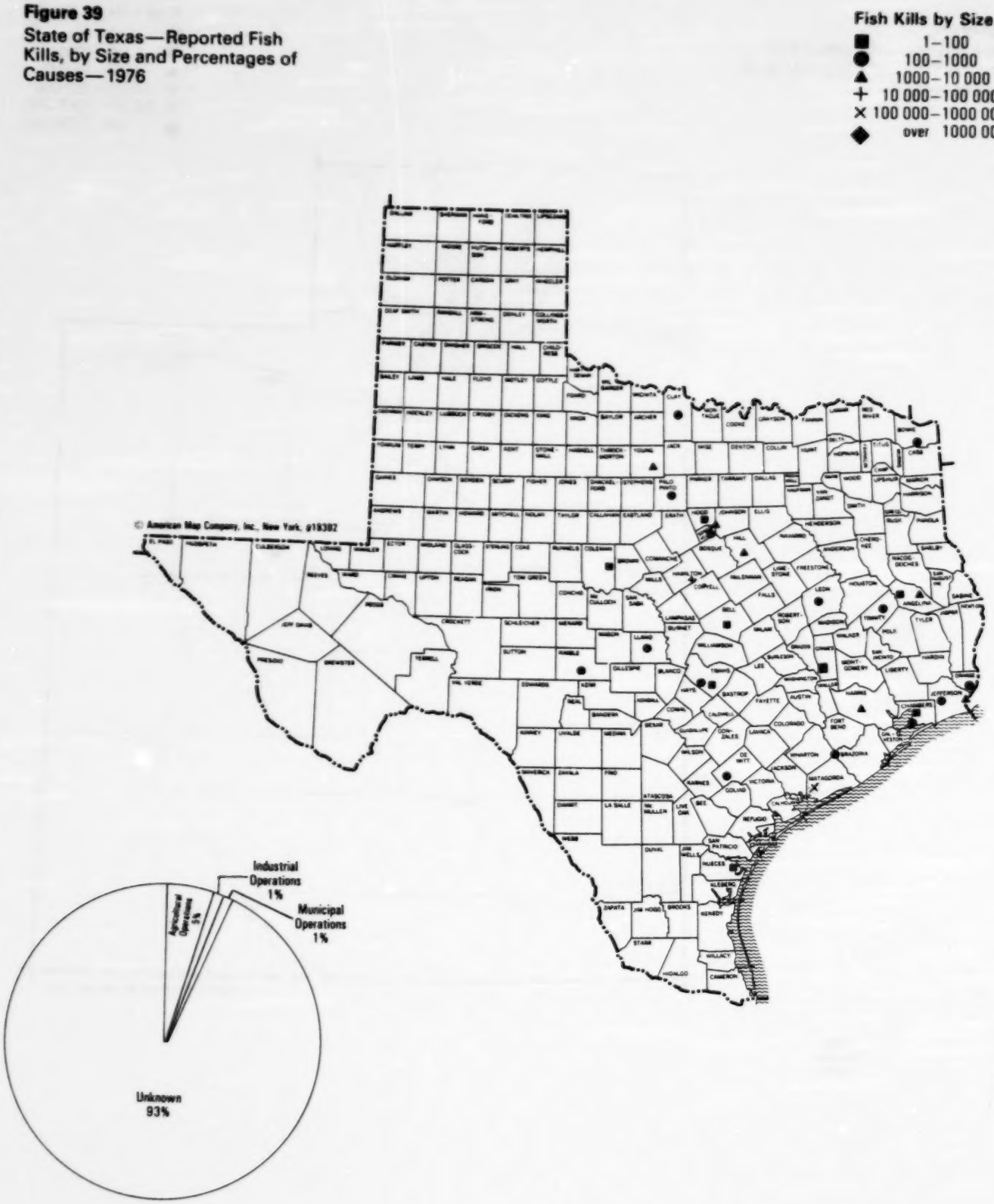
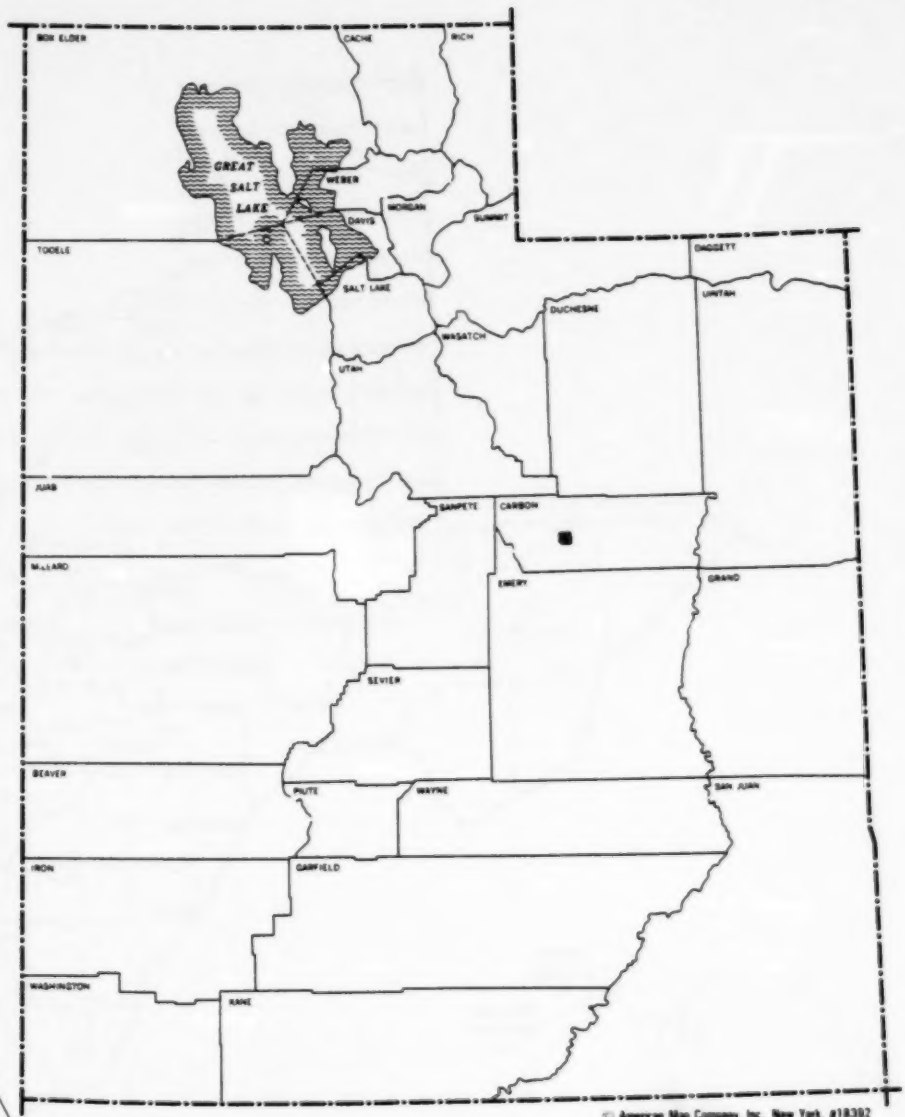


Figure 40
State of Utah—Reported Fish Kills, by Size and Percentages of Causes—1976



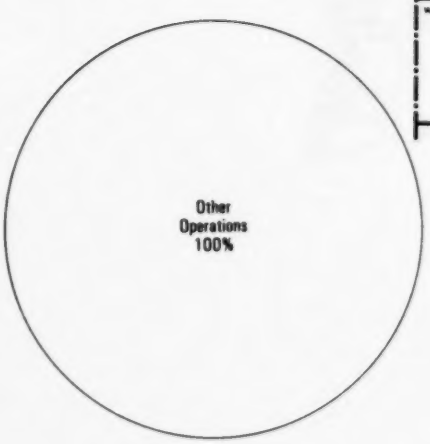
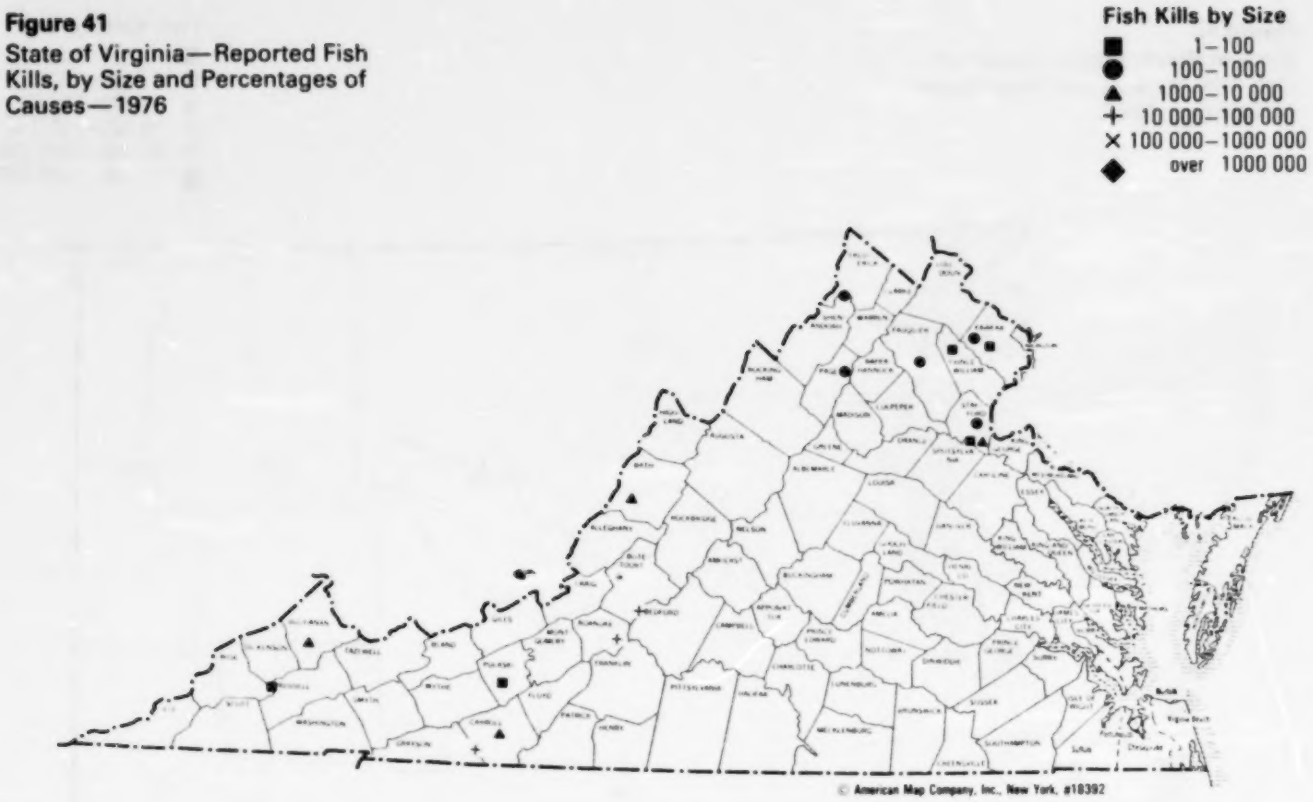


Figure 41
State of Virginia—Reported Fish Kills, by Size and Percentages of Causes—1976



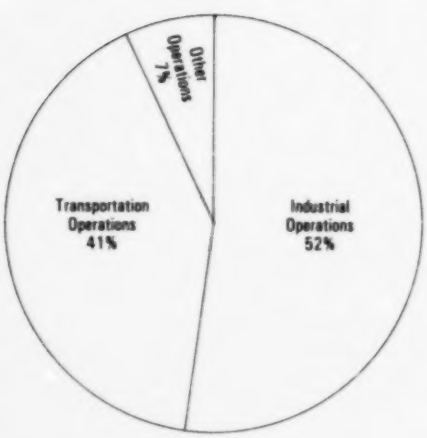


Figure 42
State of Washington—Reported Fish Kills, by Size and Percentages of Causes—1976

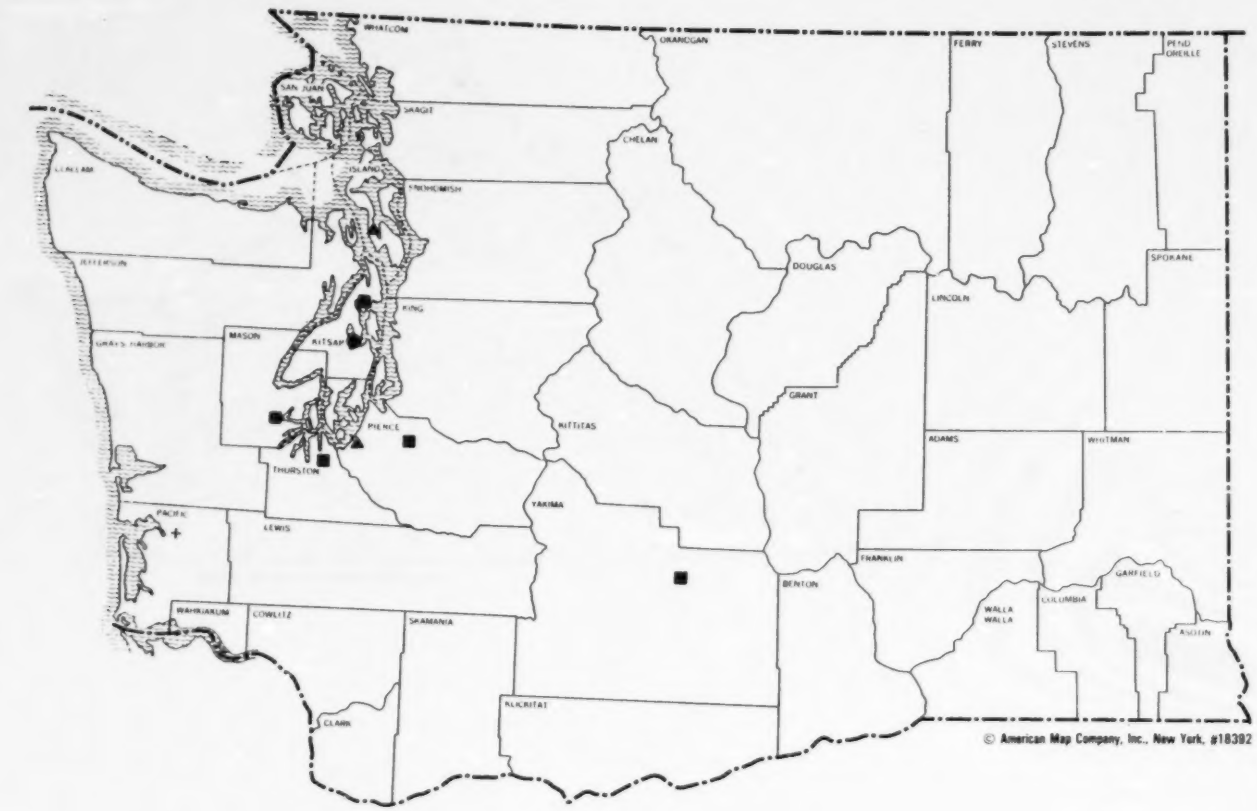


Figure 43
State of West Virginia—Reported Fish Kills, by Size and Percentages of Causes—1976

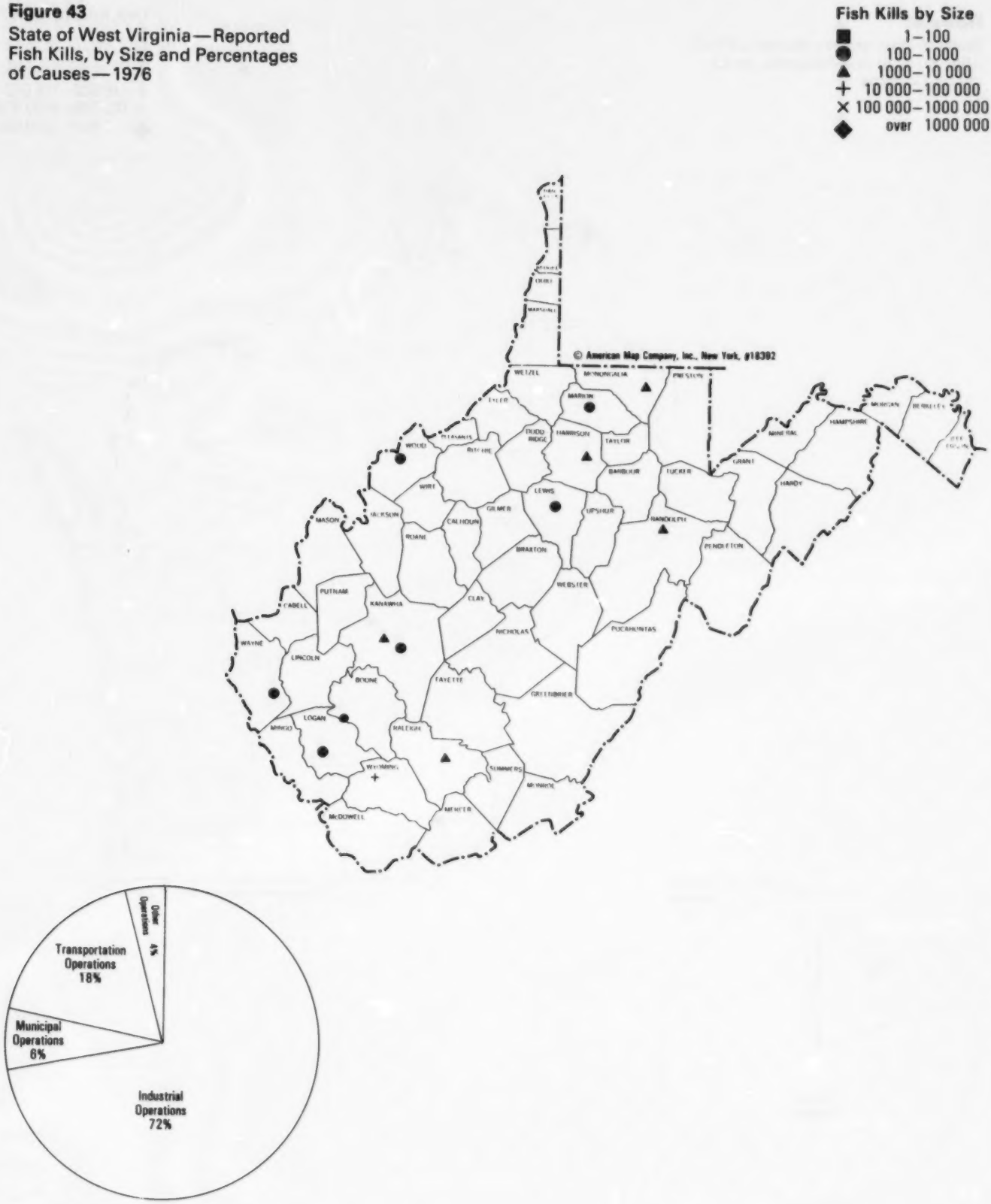


Figure 44
State of Wisconsin—Reported Fish Kills, by Size and Percentages of Causes—1976

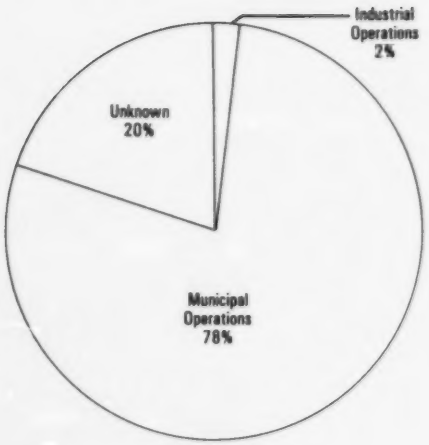
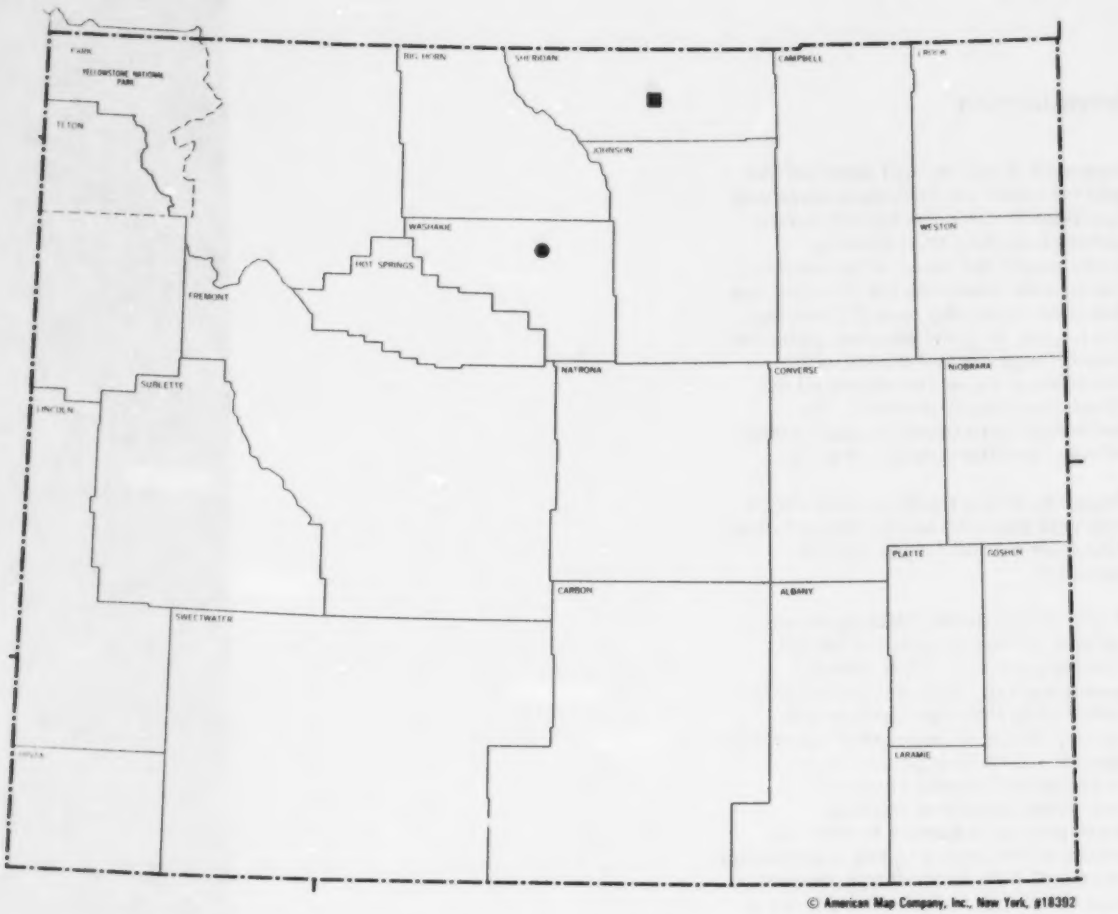
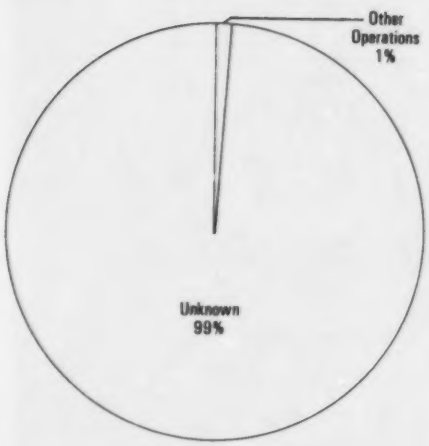


Figure 45
State of Wyoming—Reported Fish Kills, by Size and Percentages of Causes—1976





Appendices

Introduction

Appendix A lists the 601 reported fish kills for which the pollution-source was specified in 1976. The fish kill reports generally contain the following information: the name of the state and community where the kill occurred; the date, the cause; the type of fish killed, the percent of game and non-game fish killed; the percent of the kill with commerical value, the estimated fish killed, the severity of the kill, the estimated miles (river) or acres (lakes) affected and the duration of the kill.

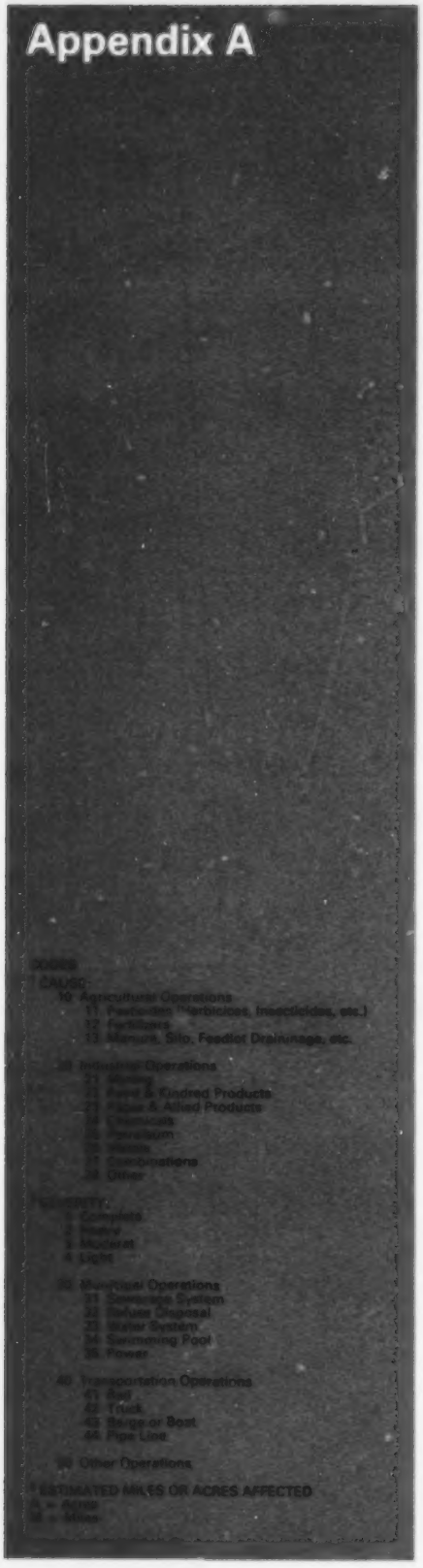
Appendix B lists the 66 individual fish kills with pollution source not specified. Kills from natural causes are not included.

Appendix C lists the State agencies actively participating in the fish kill reporting program. Observers are encouraged to report any sightings of dead fish to their appropriate state agency. Since, if the cause is not readily apparent, time is important to an investigation, reports should be submitted as soon as possible, preferably by telephone to the local offices of the agency (game wardens, for example). If no local office is present, reports can be mailed to the agency at the addresses shown.

Appendix D is a reproduction of the report form showing information desired. It is recognized that the casual observer cannot normally provide much of the information; however, the location, the estimates of the number of dead fish and tissue and date of the observation are extremely important. Also important is the probable source of pollution where it can be identified.

Appendix E defines pollution sources by the type of operation involved.

Appendix A



Report of Fish Kills, 1976—Cause Identified

Body of water	City or town	Date	Cause[1] see code page 54	Type of fish killed		Percent kill with commercial value	Estimated fish killed	Severity[2] see code page 54	Estimated miles or acres affected[3] page 54	Duration	
				Percent game	Percent non-game					Days	Hrs
Alabama											
Bear Cr. and Res.	Bear Creek	7 06 76	28	20	80	79	37,619	1	37M	09	—
Limestone Bay	Decatur	9 05 76	11	30	70	60	3,314	3	2M	—	—
State Hatchery	Eastaboga	8 28 76	11	100	—	—	109,632	1	3A	07	—
Broglan Cr.	Huntsville	7 29 76	42	22	78	—	1,763	2	1M	01	—
Pond	Huntsville	9 01 76	11	15	85	—	3,456	2	8A	03	—
Industrial Ca.	Mobile	7 31 76	31	—	100	4	206,210	1	1M	01	06
Mud Cr.	Scottsboro	9 11 76	11	75	25	—	2,203	2	—	—	—
Arizona											
Irrigation Canal	Yuma	3 19 76	12	30	70	—	3,666	2	1M	—	—
Arkansas											
Saline R.	Benton	7 15 76	24	—	—	—	—	—	—	—	—
Spadra Cr.	Clarksville	3 23 76	24	40	60	25	19,326	1	4M	—	—
McKinney, Cr.	Franklin Co.	11 09 76	42	—	—	—	178,551	2	13M	—	—
Caney Cr.	Hope	7 12 76	22	40	60	—	—	1	14M	21	—
Mountain Fork R.	Mena	11 02 76	23	—	—	—	7,500	2	18M	—	—
California											
Anderson Cr.	Anderson	1 29 76	23	25	75	—	1,000	2	2M	01	—
Aquatic Park La.	Berkeley	4 26 76	24	—	100	—	1,000	2	—	—	—
Diversiom Ditch	Bishop	1 13 76	50	25	75	—	50	4	1M	—	—
C-05 Canal	Blythe	10 16 76	11	50	50	—	3,000	2	3M	—	—
Canal D-08	Blythe	1 15 76	11	100	—	—	75	3	—	—	—
Sky Ranch La.	Corona	6 — 77	50	55	45	—	220	1	1A	01	—
Cottonwood Cr.	Cottonwood	7 20 76	50	8	92	—	160,000	1	43M	14	—
Colony Ca.	Dos Palos	10 02 76	11	50	50	—	3,100	2	6M	01	—
Sacramento R.	Dunsmuir	4 12 76	41	100	—	—	6,500	1	4M	04	—
Lindsay Cr.	Fieldbrook	5 17 76	33	87	13	—	3,500	1	1M	—	—
Squaw Cr.	Geyserville	5 26 76	21	100	—	—	54	2	1M	—	—
Goleta Slough	Goleta	7 23 76	50	—	100	—	20,000	2	3M	04	—
San Pedro Cr.	Goleta	3 08 76	25	1	99	—	1,700	1	2M	42	—
Laguna Cr.	Herald	5 23 76	11	95	5	—	2,550	1	1M	—	—
Verde Drain	Imperial	12 01 76	11	33	67	—	150	3	2M	—	—
Lake Niguel	Laguna	7 19 76	50	100	—	—	300	3	—	—	—
La Elsinore	Lake Elsinore	7 21 76	50	100	—	—	350	3	—	—	—
P C Burrow Pd. #7	Lodi	8 12 76	31	100	—	—	1,175	3	15A	—	—
Drainage Canal	Lompoc	8 06 76	44	100	—	—	25	4	—	—	—
Harbor La.	Long Beach	9 12 76	50	80	20	—	100	3	3A	—	—
Malibu Cr.	Malibu	7 16 76	31	10	90	—	1,000	3	1M	—	—
Monitor Cr.	Markleeville	5 18 76	42	100	—	—	350	1	2M	02	—
Consrvation Ca.	Montague	8 02 76	11	50	50	—	1,000	3	20M	01	—
Shasta R.	Montague	5 26 76	11	100	—	—	1,000	2	1M	01	—
Napa R.	Napa	8 18 76	50	80	20	80	10,000	2	2M	—	—
Salton Sea	North Shore	8 11 76	12	1	99	—	5,000	4	1A	—	—
Canal 16	Palo Verde	10 29 76	11	50	50	—	200	3	—	—	—
Co-3 Canal	Palo Verde	10 23 76	11	50	50	—	1,000	2	—	—	—
Irrig and Spawn Ca.	Red Bluff	8 24 76	11	10	90	—	11,000	2	1M	01	—
Marine World La.	Redwood City	8 01 75	11	100	—	100	20,000	1	—	—	—
Evans Lake	Riverside	5 12 76	50	25	75	—	200	3	—	01	—
Salton Sea	Riverside	9 11 76	28	4	96	—	50,000	2	—	01	10
Budiselich Dam	Stockton	4 10 76	24	50	50	—	475	2	3M	—	07
Sugar Cut	Tracy	8 08 76	31	100	—	—	5,000	1	1M	—	—
Del Rey Lagoon	Venice	4 16 76	11	—	100	5	5,000	1	6A	11	—
Ventura R.	Ventura	1 29 76	31	11	89	—	9	4	—	—	—
Volta Channel	Volta	6 24 76	11	40	60	—	1,750	2	—	—	—
Browns Cr.	Weaverville	7 19 76	42	5	95	—	150	—	1M	01	—
Sidney Gulch	Weaverville	5 11 76	24	97	3	—	148	1	1M	02	—
Deep Water Chanl	West Sacramento	7 07 76	50	75	25	—	250	1	2M	05	—
Lake Washington	West Sacramento	9 10 76	50	1	99	—	13,650	1	10A	03	—
Pd-Yolo Rec. Area	Winters	7 01 76	11	44	56	—	700	2	1A	—	24
Tule Ca. T9N R3E	Woodland	4 28 76	50	100	—	—	100	4	1M	—	—

Report of Fish Kills, 1976—Cause Identified (Continued)

Body of water	City or town	Date	Cause[1] see code page 54	Type of fish killed		Percent kill with commercial value	Estimated fish killed	Severity[2] see code page 54	Estimated miles or acres affected[3] page 54	Duration	
				Percent game	Percent non-game					Days	Hrs
Colorado											
West Ten Mile Cr.	Frisco Co.	11 17 76	42	100	—	—	4,100	2	5M	02	—
Lake Fork Cr.	Leadville	11 — 76	50	100	—	—	704	2	1M	03	—
Connecticut											
Black Rock Harbr	Bridgeport	6 17 76	31	—	100	—	25,000	2	—	04	—
Bridgeport Harbr	Bridgeport	6 22 76	31	—	100	—	20,000	2	—	07	—
Hockanum R.	Ellington	9 17 76	13	10	90	—	275	2	1M	05	—
Lansburgs Pond	Greenwich	8 06 76	50	50	50	—	200	2	1A	02	—
Meeting House Br.	Meriden	6 08 76	31	—	100	—	200	2	1M	—	—
Willow Brook	Meriden	6 22 76	26	—	100	—	300	1	1M	01	—
Housatonic R.	Milford	6 15 76	31	—	100	—	200,000	2	—	—	—
Spring Lake	Wallingford	8 05 76	50	20	80	—	50	4	8A	01	—
Delaware											
Rehoboth Bay	Angola	7 07 76	50	—	100	100	225,000	—	1A	01	—
White Cr.	Millville	9 13 76	31	—	100	100	2,952,154	2	4M	—	—
Christina Cr.	Newark	9 10 76	31	36	64	—	23,257	1	2M	—	05
Red Clay Cr.	Yorklyn	4 23 76	31	75	25	—	500	2	1M	05	—
Florida											
Deadend Ca.	Boca Raton	10 12 76	50	—	100	—	20	4	1M	—	—
Pond	Dania	9 12 76	24	14	86	—	1,300	2	1A	02	—
Amelia R.	Fernandina Bch.	7 23 76	31	—	100	—	200	4	1M	—	04
Deadend Ca.	Fernandina Bch.	3 08 76	31	—	100	5	10,000	2	1M	—	07
Basin-Fla. Bay	Marathon	12 15 76	28	—	100	—	550	3	1A	02	—
Canal Sw. 11 and 81	N. Lauderdale	9 16 76	11	10	90	—	3,000	2	8M	—	24
Watson Bayou	Panama City	4 19 76	31	—	100	—	242,150	3	20A	—	10
Bayou Chico	Pensacola	6 27 76	31	—	100	—	350	4	—	05	—
Fanning Bayou	Southport	10 13 76	50	20	80	60	5,895	—	2M	03	—
Canal	Sunrise	10 25 76	11	—	100	—	—	—	—	—	—
Canal	Tamarac	6 — 76	50	—	100	—	16	4	1M	—	—
Canal NW-46-46WY	Tamarac	8 05 76	11	95	5	—	500	2	1M	—	36
Lake	Tamarac	11 01 76	33	—	100	—	5,000	2	—	03	—
Lake Tutuola	Umatilla	10 21 76	22	95	5	—	16,000	1	4A	02	—
Artificial Lake	West Palm Beach	10 12 76	31	10	90	—	250	3	2A	—	—
Georgia											
Armuchee Cr.	Armuchee	8 16 76	24	15	85	50	200	3	1M	—	24
Chattahoochee R.	Atlanta	7 29 76	31	75	25	—	750	2	15M	—	12
Proctor, Cr.	Atlanta	7 18 76	31	3	97	—	5,500	2	5M	01	—
Trib-Spring Cr.	Blakely	7 28 76	11	40	60	—	—	1	3M	02	—
Tr N Sugar Cr.	Buckhead	11 27 76	42	—	100	—	75	4	1M	—	21
Cedar Cr.	Cedartown	6 11 76	31	100	—	—	500	3	3M	01	—
Cedar Cr.	Cedartown	4 24 76	41	40	60	—	200	4	3M	01	—
Trib-Cedar Cr.	Cedartown	9 12 76	11	20	80	10	2,000	3	4M	—	24
Gum Cr.	Curdele	8 10 76	34	—	—	—	—	—	1M	—	—
Pd-W Pines Golf	Douglasville	10 15 76	33	—	100	—	34	1	1A	02	—
Pond-Terrell Co	Sasser	8 16 76	11	100	—	—	—	1	1A	03	—
Warrior Cr	Sylvester	7 23 76	31	—	—	—	—	—	1M	—	—
Chattooga R	Trion	9 22 76	28	5	95	50	1,500	4	4M	—	36
Wauhatchie Br	Wildwood	8 01 76	42	13	87	—	6,265	2	1M	03	—
Cane Cr	Woodbury	9 02 76	22	30	70	1	678	3	3M	01	—
Idaho											
Pospisol Drain	Buhl	6 19 76	11	100	—	—	200	2	—	—	—
Pospisol Drain	Buhl	5 28 76	11	40	60	—	5,000	2	1M	—	06
Rock Cr	Hansen	6 17 76	12	67	33	—	150	2	1M	—	—
Clear Springs Cr	Ketchum	3 30 76	11	88	12	—	260	1	1M	01	—
Rock Cr	Kimberly	7 27 76	11	6	94	—	17,500	2	1M	—	06
Bannock Jim Slou	Thornton	6 21 76	12	1	99	—	2,000	3	1M	—	24
Illinois											
Baldwin Lake	Baldwin	2 16 76	28	100	—	—	1,609	4	1A	04	12
Shears Pd	Channahon	10 04 76	31	—	100	99	1,100	1	1A	—	12
Ten-Mile Cr	Clinton	9 10 76	31	1	99	—	14,710	3	1M	01	—
Sangamon R	Decatur	7 19 76	31	20	80	33	17,258	2	2M	01	—

Report of Fish Kills, 1976—Cause Identified (Continued)

Body of water	City or town	Date	Cause[1] see code page 54	Type of fish killed		Percent kill with commercial value	Estimated fish killed	Severity[2] see code page 54	Estimated miles or acres affected[3] page 54	Duration	
				Percent game	Percent non-game					Days	Hrs
Ellyn Lake	Glen Ellyn	5 17 76	41	98	2	991	99	1	11A	01	—
Sangamon R	Mahomet	5 04 76	11	7	93	3	1,900	1	1M	01	—
N FK Embarras R	Martinsville	4 02 76	44	46	54	90	879	4	3M	09	—
Saline Br Drain	Mayview	5 03 76	31	2	98	55	4,620	1	5M	01	—
Green La Club La	Milan	7 18 76	25	20	80	—	3,156	1	1A	09	—
Queens La	New Memphis	2 12 76	44	6	94	14	170,197	1	22A	60	—
Spring Cr	Onarga	8 26 76	13	26	74	67	858	2	1M	02	—
Crawford Cr	Ridgway	4 19 76	11	35	65	50	10,241	2	—	03	—
Middle Br	Rossville	5 05 76	11	1	99	3	29,733	3	6M	01	—
Mill Cr	Scales Mound	5 19 76	42	—	100	—	66,025	1	9M	01	—
Mid Ff Sugar Cr	Stanford	10 28 76	12	2	98	5	67,101	2	10M	08	—
Big Ditch	Tomlinson	9 14 76	24	10	90	3	76,149	1	5M	01	—
Indiana											
Bear Cr	Arcadia	8 03 76	13	40	60	—	825	2	2M	03	—
Craigmile Cr	Bass Lake	7 24 76	11	10	90	—	280	4	3M	01	—
E Fk White Lick	Bridgeport	6 08 76	31	—	—	—	300	3	2M	—	—
Lt Sand Cr	Columbus	10 29 76	28	—	—	—	109	4	1M	—	—
N Hammond Pond	Correct	2 15 76	13	10	90	—	100	4	2A	—	—
Christian Cr	Elkhart	2 28 76	33	58	42	—	1,623	2	1M	01	—
Duck Cr	Elwood	9 04 76	31	16	84	—	676	3	10M	02	—
Lt Duck Cr	Elwood	4 17 76	28	3	97	—	70	3	1M	03	—
Bachelor Run	Flora	7 29 76	13	55	45	—	2,263	2	6M	—	36
Bachelor Run	Flora	9 24 76	13	1	99	—	5,000	—	1M	02	—
Prairie Cr	Frankfort	9 17 76	35	21	79	—	1,400	2	2M	01	—
Greensburg Res	Greensburg	6 19 76	31	100	—	—	1,300	2	1A	01	—
Flat Pond Ditch	Haubstadt	3 02 76	13	—	—	—	—	2	3M	01	—
Lick Cr	Indianapolis	4 09 76	22	15	85	—	2,200	1	14M	04	—
W FK White R	Indianapolis	11 09 76	31	40	60	—	4,800,000	2	160M	09	—
Monon Cr	Munon	9 10 76	13	60	40	—	2,200	2	3M	01	—
Snow Ditch	Monticello	4 20 76	12	43	57	—	7,000	1	1M	01	—
White Lick Cr	Mooresville	11 06 76	31	20	80	—	6,300	2	3M	—	—
White R	Muncie	7 28 76	31	62	38	—	8,872	2	1M	02	—
Lick Creek	Paoli	4 29 76	12	30	70	—	77	2	2M	01	—
Wabash R	Peru	6 16 76	26	100	—	—	841	4	5M	02	—
Grassy Fk Cr	Point Isabel	9 01 76	22	9	91	—	6,221	2	3M	03	—
Broad Cr	Sharpeville	8 14 76	50	3	97	—	1,010	2	1M	02	—
Bell Cr	Sulfur Springs	5 08 76	12	100	—	—	4,054	2	1M	01	—
Jordan Cr	Terre Haute	6 05 76	24	80	20	—	624	3	10M	02	—
Cicero & Buck Cr	Tipton	8 29 76	22	48	52	—	1,176	2	2M	03	—
Fishback Cr	Whitestown	4 23 76	11	61	39	—	808	2	3M	03	—
Iowa											
Small Cr	Algona	7 19 76	50	—	100	—	500	1	2M	02	—
Long Cr	Columbus City	5 16 76	13	50	50	—	100	4	5M	—	03
Otter Cr	Elgin	5 13 76	12	2	98	—	2,500	2	1M	—	04
Kansas											
Anthony City La	Anthony	3 04 76	11	100	—	100	28,000	4	135A	08	—
Sandy Cr	Aqumia	3 01 76	11	60	40	75	800	1	1M	10	—
Tr-Chikaskia R	Agronia	3 01 76	11	60	40	75	300	4	1M	04	—
Tr-Chikaskia R	Argonia	3 01 76	11	60	40	70	500	2	1M	05	—
Walnut R	Augusta	1 15 76	25	9	91	30	1,250	4	20M	10	—
Fall Cr	Caldwell	3 01 76	11	60	40	70	1,000	4	4M	06	—
Farm Ponds (5)	Cloud Co	2 20 76	11	100	—	100	2,500	3	5A	—	—
Cowskin Cr	Colwich	1 01 76	31	50	50	25	2,500	1	1M	—	—
Farm Ponds (19)	Cowley Co	2 20 76	11	100	—	100	10,000	3	20A	—	—
Spring Cr	Danville	3 01 76	11	60	40	70	1,100	3	3M	08	—
American Legn Pd	El Dorado	4 29 76	25	85	15	15	2,000	4	5A	03	—
Wet Walnut Cr	Great Bend	9 10 76	31	20	80	40	4,000	4	3M	02	—
Farm Ponds (9)	Harper Co	2 20 76	11	100	—	100	5,000	3	10A	—	—
Tri-Independence	Lancaster	6 23 76	13	25	75	35	1,000	1	1M	05	—
Three-Mile Cr	Leavenworth	8 24 76	31	35	65	90	600	2	2M	01	—
Indian Cr	Leawood	11 05 76	31	95	5	30	250	1	2M	—	24
Middle Cr	Lincolnville	1 01 76	13	70	30	15	200	2	1M	20	—
Prairie Cr	Mayfield	3 13 76	11	70	30	70	600	4	2M	14	—

Report of Fish Kills, 1976—Cause Identified (Continued)

Body of water	City or town	Date	Cause[1] see code page 54	Type of fish killed: Percent game	Type of fish killed: Percent non-game	Percent kill with commercial value	Estimated fish killed	Severity[2] see code page 54	Estimated miles or acres affected[3] page 54	Duration: Days	Duration: Hrs
Sand Cr	Newton	8 03 76	31	40	60	80	9,500	2	1M	01	—
Pottawatomie Cr	Osawatomie	11 24 76	41	15	85	40	4,100	3	1M	10	—
Farms Ponds (28)	Sedgwick Co	2 20 76	11	100	—	100	15,000	3	30A	—	—
Muller Farm Pd	Solomon	2 21 76	11	95	5	100	500	3	—	05	—
Farm Ponds (32)	Sumner Co	2 20 76	11	100	—	100	17,500	3	35A	—	—
Wellington Lake	Wellington	3 01 76	11	90	10	90	10,000	4	349A	14	—
Cowskin Cr	Wichita	10 05 76	24	7	93	70	25,000	1	1M	02	—
Gipson Cr	Wichita	10 06 76	31	20	80	20	500	3	1M	—	—
Kentucky											
Spring Cr	Albany	9 04 76	31	10	90	—	31,512	1	2M	03	—
Chadwick Cr	Catlettsburg	4 17 76	42	6	94	—	6,001	1	4M	02	—
Salt R	Harrodsburg	8 08 76	31	82	18	—	352	1	1M	02	—
Salt R	Harrodsburg	5 18 76	31	47	53	—	25,648	1	6M	16	—
Owens Br	Hazard	4 15 76	25	1	99	—	1,286	2	1M	01	—
Muncys Cr	Hyden	5 28 76	25	—	—	—	—	—	2M	—	—
Beargrass Cr	Louisville	7 28 76	31	—	—	—	15,623	1	1M	03	—
Goose Cr	Lowes	5 20 76	41	11	89	—	2,415	1	2M	02	—
Indian Cr	McKee	5 10 76	50	10	90	—	2,227	1	1M	02	—
E Fk Clarks R	Murray	9 30 76	31	15	85	—	14,354	2	5M	04	—
Stepstone Cr	Owingsville	11 08 76	41	—	—	—	—	1	1M	01	—
Spewing Camp Br	Wayland	1 06 76	21	11	89	—	14,578	1	7M	02	—
Louisiana											
Bayou Manchac	Baton Rouge	9 29 76	31	1	99	1	11,000	2	5M	—	—
Jefferson Ca	Delcambre	7 01 76	43	12	88	12	700	2	1M	01	—
Bayou Teche	Jeanerette	10 28 76	22	1	99	95	700	2	3M	64	—
Bayou Jack Coule	Lydia	7 23 76	11	—	—	—	500	—	—	—	—
Bayou Jacko	Natchitoches	10 13 76	31	50	50	50	200	3	1M	01	—
Bayou Jacko	Natchitoches	8 04 76	31	90	10	10	2,000	2	1M	01	—
Tribred R	Plain Dealing	7 02 76	25	75	25	50	200	2	2M	01	—
Whites Bayou	Zachary	9 04 76	11	20	80	20	—	2	4M	01	—
Maryland											
St Martins R	Bishopville	9 09 76	22	—	100	100	2,000	2	50A	02	—
Pond	Cecilton	6 03 76	11	5	95	—	100	3	20A	02	—
Pond	Federalsburg	5 28 76	11	100	—	100	800	2	1A	02	—
Linganore Cr	Frederick	7 16 76	33	8	92	—	1,700	2	1M	—	02
Patapsco R	Glen Burnie	5 20 76	50	20	80	5	36	3	—	02	—
Patapsco R	Glen Burnie	5 14 76	31	—	100	—	200	3	20A	03	—
Pond	Kent Co	5 22 76	11	4	96	4	1,800	2	1A	02	—
Patapsco R	Sparrows Point	8 20 76	28	15	85	100	115	4	30A	—	—
Patapsco R	Sparrows Point	4 19 76	28	85	15	100	6	4	30A	01	—
Beaver Dam Run	Towson	4 16 76	24	2	98	—	2,300	2	2M	02	—
Massachusetts											
North Pd	Hopkinton	6 29 76	50	30	70	—	3,500	3	234A	14	—
Discharge Canal	Plymouth	11 23 76	28	—	—	100	10,000	1	—	05	—
Minnesota											
Osakis Lake	Long Prairie	11 14 76	28	100	—	—	200	4	2A	—	—
Miscissippi											
Tallabogue Cr	Forest	12 23 76	28	50	50	—	4,000	1	20M	01	—
Pearl R	Jackson	7 22 76	31	50	50	—	450	4	3M	—	06
Missouri											
Cedar Cr	Boone Co	7 04 76	21	—	—	—	—	—	—	—	—
Lake of Ozarks	Camdenton	7 19 76	50	—	100	—	52,000	2	7M	—	—
Ditch 24	Cape Girardeau	7 31 76	11	—	—	—	20	4	1M	—	—
Unnamed Ditch	Carthage	2 09 76	22	20	80	—	150	3	1M	01	—
Hinkson Cr	Columbia	9 21 76	31	25	75	—	284	3	1M	—	—
Unnamed Pond	Columbia	2 17 76	31	100	—	—	98	1	1A	—	—
Bear Cr	Hannibal	8 11 76	31	33	67	—	1,496	2	1M	01	—
W Fk Cuivre R	Hawk Point	8 09 76	13	2	98	—	40	3	1M	—	—
City Reservoir	Jamesport	5 12 76	11	80	20	—	2,200	2	10A	02	—
Wares Cr	Jefferson City	7 21 76	31	—	—	—	250	2	2M	01	—
Indian Cr	Kansas City	11 08 76	31	7	93	—	549	3	1M	—	—

Report of Fish Kills, 1976—Cause Identified (Continued)

Body of water	City or town	Date	Cause[1] see code page 54	Type of fish killed: Percent game	Type of fish killed: Percent non-game	Percent kill with commercial value	Estimated fish killed	Severity[2] see code page 54	Estimated miles or acres affected[3] page 54	Duration: Days	Duration: Hrs
Shoal Cr	Kansas City	10 09 76	31	20	80	—	500	1	1M	05	—
Todd Cr	Kansas City	2 10 76	28	40	60	—	22	3	3M	—	—
La of the Ozarks	La of the Ozark	7 13 76	50	100	—	—	200	3	—	—	—
Mississippi R	Louisiana	10 08 76	43	—	—	—	4,500	2	—	—	—
Bear Cr	Macon Co	7 06 76	31	—	—	—	1,170	—	4M	—	—
Brush Cr	Polk Co	8 17 76	31	—	—	—	300	—	1M	—	—
Breton Cr	Potosi	10 29 76	42	2	98	—	8,348	1	3M	01	—
Flat Cr	Sedalia	8 14 76	31	—	—	—	100	3	2M	02	—
Brush Cr	Shelbina	6 16 76	12	95	5	—	1,240	1	2M	—	—
James R	Springfield	3 02 76	31	30	70	—	4,950	2	6M	01	—
Cuivre R	Troy	2 15 76	11	—	—	—	—	2	1M	01	—
Arrowhead Lake	West Plains	5 21 76	11	100	—	—	1,000	3	—	—	—
Montana											
Jefferson R	Cardwell	7 10 76	11	60	40	—	350	3	1M	02	—
Silver Cr	Helena	2 15 76	21	100	—	—	20,000	1	4M	14	—
Burnt Fk	Stevensville	7 09 76	11	70	30	—	500	3	2M	02	—
Nebraska											
Blinde Farm Pond	Johnson	6 03 76	12	100	—	—	22	2	1A	—	—
Sack Lake	McCool Junction	2 10 76	50	100	—	—	97	4	—	—	—
Penn Park Lake	Neligh	3 18 76	12	100	—	—	360	4	1A	—	—
Niobrara R	Spencer	4 22 76	35	—	—	—	—	4	—	—	06
Niobrara R	Spencer	6 28 76	35	15	85	—	862	3	3M	—	06
Stinking Water C	Wauneta	5 10 76	13	5	95	—	5,000	3	10M	—	—
Nevada											
Edgewood Cr	State Line	7 29 76	32	10	90	—	—	4	1M	—	02
New Hampshire											
Cocheco R	Dover	6 16 76	26	—	100	60	8750	2	1M	01	—
Hubbard Brook	West Thronton	7 23 76	50	40	60	—	150	4	1M	01	—
New Jersey											
Toth Farm Pd	Alexandria Twp	8 01 76	11	100	—	—	25	3	1A	02	—
Lopatcong Cr	Alpha	6 23 76	42	—	100	—	100	4	1M	01	—
Bound Br Res	Bound Brook	9 08 76	33	25	75	—	10,000	2	5A	01	—
Berrys Cr	Carlstadt	10 15 76	50	—	100	—	15,000	2	3M	01	—
Wichecheoke Cr	Flemington	8 10 76	24	5	95	—	500	2	3M	02	—
Deal La	Interlaken	4 27 76	50	10	90	—	500	3	10A	01	—
Lt York Br	Little York	6 22 76	50	50	50	—	500	2	1M	01	—
Pennsauken Cr	Maple Shade	6 16 76	31	—	100	—	900	3	1M	01	—
Goffle Br	Midland Park	4 07 76	50	5	95	—	2,500	2	3M	01	—
Hakihokake Br	Milford	9 23 76	50	—	100	—	50	4	1M	—	01
Lake Nescochaque	Pleasant Mills	7 16 76	31	25	75	—	17,000	2	10A	02	—
Heardes Br	Port Reading	9 21 76	24	—	100	—	200	4	1M	01	—
Rhinehart Br	Washington Twp	2 21 76	13	50	50	—	200	2	1M	01	—
Upper Mt Glen La	West Milford	7 10 76	50	50	50	—	100	4	10A	02	—
Tomaqua Pd	Westfield	8 28 76	42	—	100	—	1,500	2	5A	01	—
New Mexico											
La Mesa Drain	Las Cruces	6 27 76	11	1	99	—	—	1	12M	02	—
North Carolina											
Swift Cr	Apex	11 16 76	33	78	22	—	321	1	3M	02	—
Eno R	Hillavorough	6 22 76	31	70	30	—	750	1	272M	01	—
Crow Cr	Lexington	4 20 76	50	25	75	—	7,500	2	50A	03	—
Swearing Cr	Lexington	4 21 76	50	25	75	—	12,500	2	150A	03	—
Burden Cr	Lowes Grove	3 03 76	50	90	10	—	500	2	2M	04	—
Lake Lee	Monroe	5 15 76	11	30	70	—	2,000	2	—	03	—
Tr to Taylors Cr	Mt Holly	2 26 76	50	—	100	—	—	1	2M	—	—
Beetree Cr	Swannanoa	8 24 76	24	24	76	—	—	2	5M	01	12
Fishing Cr	Tarboro	7 29 76	13	40	60	—	800	2	4M	01	—
North Dakota											
Arroda La	Fort Clark	8 07 76	13	100	—	—	200	3	—	02	—

Report of Fish Kills, 1976—Cause Identified (Continued)

Body of water	City or town	Date	Cause[1] see code page 54	Type of fish killed: Percent game	Type of fish killed: Percent non-game	Percent kill with commercial value	Estimated fish killed	Severity[2] see code page 54	Estimated miles or acres affected[3] page 54	Duration: Days	Duration: Hrs
Ohio											
Lt Three-Mile Cr	Adams Co	4 08 76	35	—	—	—	22	—	—	—	—
Ottawa R	Allen Co	6 29 76	31	—	—	—	419	—	—	—	—
Six Mile Cr	Allen Co	5 05 76	26	—	—	—	575	—	—	—	—
Tr-Rattlesnake C	Allen Co	6 22 76	31	—	—	—	11,982	—	—	—	—
Mill Cr	Ashtabula Co	4 24 76	31	—	—	—	160	—	—	—	—
McDougal Br	Athens Co	8 09 76	11	—	—	—	4,372	—	—	—	—
Dicks Cr	Butler Co	3 22 76	26	—	—	—	5	—	—	—	—
Four Mile Cr	Butler Co	9 13 76	31	—	—	—	3,746	—	—	—	—
Great Miami R	Butler Co	9 16 76	32	—	—	—	5,636	—	—	—	—
Great Miami R	Butler Co	7 22 76	32	—	—	—	1,078,047	—	—	—	—
Great Miami R	Butler Co	4 24 76	32	—	—	—	18,141	—	—	—	—
Great Miami R	Butler Co	11 07 76	26	—	—	—	848	—	—	—	—
Great Miami R	Butler Co	8 13 76	32	—	—	—	738	—	—	—	—
Great Miami R	Butler Co	10 13 76	26	—	—	—	829	—	—	—	—
Tr-Lt Miami R	Clark Co	9 10 76	13	—	—	—	5,843	—	—	—	—
Shayler Run Cr	Clermont Co	5 25 76	31	—	—	—	624	—	—	—	—
Stonelick Cr	Clermont Co	6 23 76	31	—	—	—	184	—	—	—	—
Todds Cr	Clinton Co	10 02 76	13	—	—	—	2,234	—	—	—	—
Lt Mill Cr	Coshocton Co	6 03 76	21	—	—	—	516	—	—	—	—
Sandusky R	Crawford Co	8 28 76	31	—	—	—	1,645	—	—	—	—
Tr-Sandusky R	Crawford Co	9 28 76	13	—	—	—	72,794	—	—	—	—
Maumee R	Defiance Co	7 23 76	33	—	—	—	6	—	—	—	—
Lt Rush Cr	Fairfield Co	5 27 76	41	—	—	—	41,760	—	—	—	—
Poplar Cr	Fairfield Co	10 05 76	31	—	—	—	4	—	—	—	—
Paint Cr	Fayette Co	6 18 76	31	—	—	—	4,776	—	—	—	—
Scioto R	Franklin Co	10 01 76	31	—	—	—	71,225	—	—	—	—
Scioto R	Franklin Co	8 26 76	50	—	—	—	1	—	—	—	—
Birch Run	Greene Co	4 20 76	13	—	—	—	1	—	—	—	—
Old Town Cr	Greene Co	9 20 76	13	—	—	—	5,285	—	—	—	—
Shawnee Cr	Greene Co	7 30 76	50	—	—	—	79	—	—	—	—
Tr-Caesar Cr	Greene Co	6 04 76	13	—	—	—	6	—	—	—	—
Tr-Johnson Fk	Guernsey Co	6 25 76	25	—	—	—	3	—	—	—	—
Tr-Leatherwood C	Guernsey Co	8 23 76	25	—	—	—	4,470	—	—	—	—
N Branch Cr	Hamilton Co	9 14 76	42	—	—	—	85	—	—	—	—
Blanchard R	Hancock Co	9 02 76	31	—	—	—	85	—	—	—	—
N Br Blanchard R	Hancock Co	2 14 76	44	—	—	—	19	—	—	—	—
Ottawa Cr	Hancock Co	2 14 76	44	—	—	—	19	—	—	—	—
S Br Oil Ditch	Hancock Co	11 11 76	42	—	—	—	1	—	—	—	—
Tr-Blanchard R	Hancock Co	8 16 76	12	—	—	—	5,864	—	—	—	—
Rush Cr	Hardin Co	4 20 76	12	—	—	—	7,617	—	—	—	—
Dry Cr	Henry Co	6 16 76	31	—	—	—	330	—	—	—	—
Maumee R	Henry Co	6 30 76	50	—	—	—	6	—	—	—	—
Tr-Dotsun Cr	Highland Co	7 30 76	13	—	—	—	860	—	—	—	—
Tr-Rocky Fk Cr	Highland Co	5 22 76	11	—	—	—	236	—	—	—	—
Doughty Cr	Holmes Co	6 06 76	22	—	—	—	27	—	—	—	—
Symmes Cr	Jackson Co	6 28 76	21	—	—	—	596	—	—	—	—
Lake Erie	Lake Co	10 27 76	35	—	—	—	150,000	—	—	—	—
Raccoon Cr	Licking Co	4 08 76	31	—	—	—	220	—	—	—	—
Tr-Licking Cr	Licking Co	6 07 76	11	—	—	—	20	—	—	—	—
Tr-Muddy Fork	Licking Co	8 17 76	13	—	—	—	333	—	—	—	—
Alexander Ditch	Lorain Co	7 27 76	50	—	—	—	65	—	—	—	—
Boston Road Cr	Lorain Co	9 03 76	31	—	—	—	166	—	—	—	—
Swan Cr	Lucas Co	8 16 76	31	—	—	—	427	—	—	—	—
Wolf Cr	Lucas Co	7 27 76	50	—	—	—	326	—	—	—	—
Walnut Run	Madison Co	8 28 76	41	—	—	—	39	—	—	—	—
Rocky R	Medina Co	8 31 76	31	—	—	—	45,354	—	—	—	—
Montezuma Cr	Mercer Co	6 06 76	32	—	—	—	27	—	—	—	—
Brush Cr	Miami Co	5 16 76	13	—	—	—	1	—	—	—	—
E Br Lost Cr	Miami Co	5 16 76	11	—	—	—	17,671	—	—	—	—
Great Miami R	Miami Co	12 27 76	31	—	—	—	18,390	—	—	—	—
Painter Cr	Miami Co	9 24 76	11	—	—	—	3,090	—	—	—	—
Great Miami R	Montgomery Co	4 19 76	31	—	—	—	300	—	—	—	—
Great Miami R	Montgomery Co	9 16 76	31	—	—	—	420	—	—	—	—
Twin Cr	Montgomery Co	8 09 76	13	—	—	—	18	—	—	—	—
Wolf Cr	Montgomery Co	11 02 76	27	—	—	—	9,574	—	—	—	—
Wakatumika Cr	Muskingum Co	6 12 76	31	—	—	—	26	—	—	—	—

Report of Fish Kills, 1976—Cause Identified (Continued)

Body of water	City or town	Date	Cause[1] see code page 54	Type of fish killed		Percent kill with commercial value	Estimated fish killed	Severity[2] see code page 54	Estimated miles or acres affected[3] page 54	Duration	
				Percent game	Percent non-game					Days	Hrs
Flat Rock Cr	Paulding Co	8 24 76	31	—	—	—	397	—	—	—	—
Flat Rock Cr	Paulding Co	10 12 76	25	—	—	—	6	4	—	—	—
Scioto R	Pickaway Co	7 16 76	31	—	—	—	20	—	—	—	—
Big Run	Pike Co	10 03 76	50	—	—	—	450	—	—	—	—
Crooked Cr	Pike Co	9 11 76	31	—	—	—	559	—	—	—	—
Seven Mile Cr	Preble Co	10 24 76	27	—	—	—	16,270	—	—	—	—
Seven Mile Cr	Preble Co	9 05 76	31	—	—	—	18,524	—	—	—	—
Tr-Twin Cr	Preble Co	10 01 76	31	—	—	—	10	—	—	—	—
Cranberry Cr	Putnam Co	5 30 76	22	—	—	—	25,470	—	—	—	—
Hickey Ditch	Putnam Co	9 15 76	31	—	—	—	51,414	—	—	—	—
Jennings Cr	Putnam Co	4 05 76	31	—	—	—	11,346	—	—	—	—
Tr-Blanchard R	Putnam Co	5 12 76	12	—	—	—	1,121	—	—	—	—
Black Fk Mohican	Richland Co	5 20 76	26	—	—	—	395	—	—	—	—
Whetstone Cr	Richland Co	9 18 76	13	—	—	—	1,751	—	—	—	—
Muskelunge Cr	Sandusky Co	6 09 76	50	—	—	—	17	—	—	—	—
Tr-Sugar Cr	Sandusky Co	6 19 76	24	—	—	—	88,418	—	—	—	—
Millers Run Cr	Scioto Co	8 23 76	50	—	—	—	48	—	—	—	—
Walnut Run	Trumbull Co	7 24 76	31	—	—	—	621	—	—	—	—
Walnut Run	Trumbull Co	11 21 76	31	—	—	—	75	—	—	—	—
Elk Fork	Vinton Co	4 26 76	28	—	—	—	78	—	—	—	—
Clear Cr	Warren Co	5 01 76	11	—	—	—	826	—	—	—	—
Clear Cr	Warren Co	9 16 76	31	—	—	—	5	—	—	—	—
Clear Cr	Warren Co	9 13 76	31	—	—	—	244	—	—	—	—
Flat Rock Cr	Warren Co	5 07 76	12	—	—	—	968	—	—	—	—
Tr-Bear Run	Warren Co	2 13 76	25	—	—	—	8	—	—	—	—
Apple Cr	Wayne Co	7 21 76	42	—	—	—	14,228	—	—	—	—
Shreve Cr	Wayne Co	12 12 76	50	—	—	—	20	—	—	—	—
Sugar Cr	Wayne Co	8 24 76	50	—	—	—	2,656	—	—	—	—
Rocky Ford Cr	Wood Co	2 15 76	44	—	—	—	273	—	—	—	—
Toussaint Cr	Wood Co	2 16 76	25	—	—	—	57	—	—	—	—
Tr-Roots Cr	Wood Co	6 28 76	44	—	—	—	6,992	—	—	—	—
Oklahoma											
Caddo Cr	Ardmore	12 30 76	25	—	100	—	50	4	1M	—	—
Farm Pond	Billings	3 04 76	11	—	—	—	500	1	1A	—	—
Farm Pond	Billings	3 – 76	11	—	—	—	—	2	—	—	—
Farm Pond	Billings	3 12 76	11	—	—	—	—	2	—	—	—
Farm Ponds	Billings	2 20 76	11	—	—	—	—	2	—	—	—
Farm Pond	Bison	3 01 76	11	20	80	80	300	1	1A	—	—
Farm Pond	Broken Arrow	3 09 76	25	—	—	—	—	—	—	—	—
Farm Pond	Cashion	4 08 76	11	—	100	—	100	4	—	—	—
Farm Ponds	Claremore	1 14 76	44	100	—	100	—	1	10A	—	—
Black Bear Cr	Enid	5 06 76	13	20	80	50	1,543	2	4M	—	—
Farm Pond	Enid	3 29 76	11	100	—	100	3,000	2	—	—	—
Farm Pond	Garfield Co	2 27 76	11	—	—	—	—	2	—	—	—
Farm Pond	Garfield Co	2 27 76	11	—	—	—	—	2	—	—	—
Farm Pond	Garfield Co	2 27 76	11	—	—	—	—	2	—	—	—
Farm Pond	Grant Co	2 27 76	11	—	—	—	—	2	—	—	—
Tr-Skeleton Cr	Hennessey	2 23 76	11	—	100	—	1,000	1	2M	—	—
Farm Pond	Hennessey	3 08 76	11	—	—	—	—	2	1A	—	—
Farm Pond	Hennessey	2 29 76	11	70	30	50	2,000	1	10A	—	—
Mud Cr	Idabel	9 08 76	11	—	—	—	—	—	—	—	—
Salisaw Cr	Marble City	8 09 76	24	—	—	—	—	3	1M	—	—
Walnut Cr	McClain Co	7 27 76	44	100	—	100	12	4	1M	—	—
Mountain Fk R	McCurtain Co	11 02 76	23	—	—	—	—	3	—	—	—
Farm Pond	Medford	2 27 76	11	—	—	—	—	2	—	—	—
Farm Pond	Morrison	3 10 76	11	—	—	—	—	2	—	—	—
Farm Pond	Morrison	3 — 76	11	—	—	—	—	2	—	—	—
Farm Pond	Noble Co	3 04 76	11	50	50	50	2,400	1	3A	—	—
Farm Pond	Noble Co	3 — 76	11	—	—	—	—	2	—	—	—
Farm Pond	Noble Co	3 01 76	11	—	—	—	—	2	—	—	—
Manley Farm Pond	Noble Co	3 04 76	11	20	80	20	600	1	1A	—	—
Farm Pond	Oklahoma City	4 08 76	31	—	100	—	24	4	—	—	—
Eliza Cr	Osage Co	6 22 76	44	—	100	100	250	4	—	—	—
Farm Pond	Perry	3 03 76	11	—	—	—	—	2	—	—	—
Pryor Cr	Pryor	3 29 76	12	—	—	—	94	4	2M	—	—
Sallisaw Cr	Sequayah Co	8 20 76	11	—	—	—	550	3	—	—	—

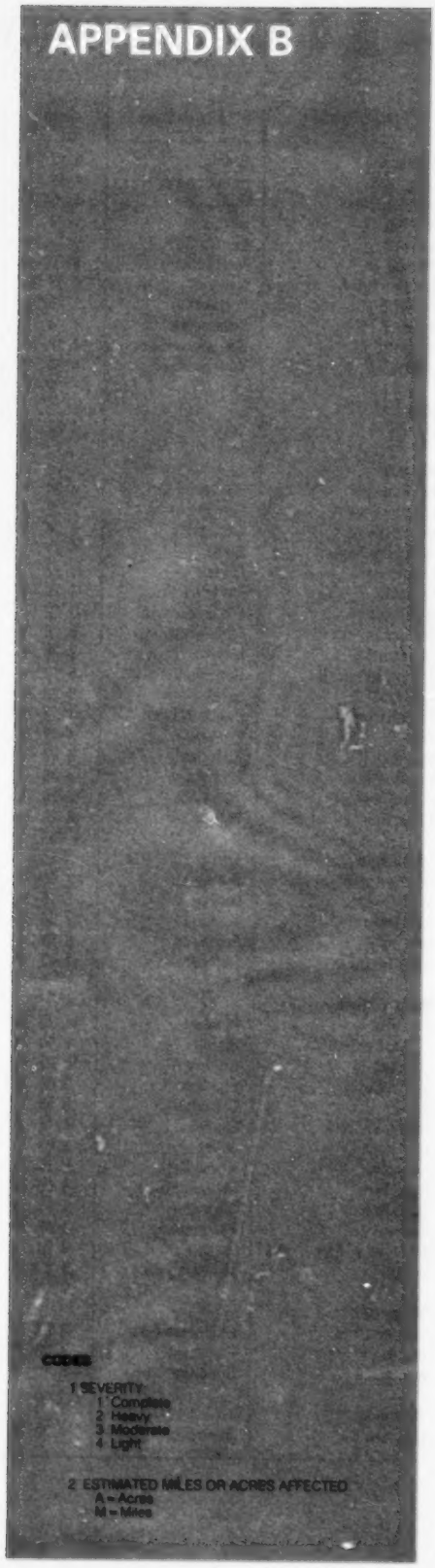
Report of Fish Kills, 1976—Cause Identified (Continued)

Body of water	City or town	Date	Cause[1] see code page 54	Type of fish killed		Percent kill with commercial value	Estimated fish killed	Severity[2] see code page 54	Estimated miles or acres affected[3] page 54	Duration	
				Percent game	Percent non-game					Days	Hrs
Deep Fork R	Sparks	7 26 76	44	—	—	—	—	3	3M	—	—
Farm Pond	Tulsa	6 15 76	50	—	—	—	—	2	—	—	—
Wewoka Cr	Wewoka	4 01 76	44	—	—	—	100	4	—	—	—
Oregon											
Arch Cape Cr	Arch Cape	1 17 76	31	100	—	—	60	2	1M	02	—
Bear Cr	Ashland	6 02 76	42	50	50	—	1,000	2	5M	01	—
Jones Cr	Grants Pass	2 03 76	50	100	—	—	90	2	1M	14	—
Johnson Cr	Gresham	5 21 76	32	5	95	—	10,000	2	2M	—	—
Rock Cr	Heppner	5 30 76	11	25	75	—	700	1	1M	—	05
Umatilla R	Hermiston	7 14 76	11	25	75	—	4,000	2	4M	01	—
Meacham Cr	Meacham	7 14 76	44	95	5	—	1,850	1	1M	05	—
Jackson Cr	Medford	9 09 76	24	75	25	—	500	1	4M	—	12
Johnson Cr	Portland	7 23 76	22	5	95	—	2,000	3	—	—	—
Mount Scott Cr	Portland	9 01 76	28	50	50	10	100	4	1M	—	12
Umpqua R	Reedsport	1 03 76	41	—	—	100	—	4	—	—	—
Clagget Cr	Salem	6 18 76	31	—	100	—	2,000	3	1M	01	—
Croisan Slough	Salem	8 04 76	24	—	100	—	50	4	1M	05	—
Private Pond	Salem	10 12 76	11	—	100	—	8	1	1M	01	—
S Fk Scappoose C	Scappoose	5 07 76	33	44	56	—	20,000	2	1M	—	04
Spoon Cr	Shedd	11 11 76	13	10	90	—	3,000	2	1M	01	—
Trib-Wildcat Cr	Vaughn	2 09 76	41	100	—	—	10	3	1M	—	—
Pennsylvania											
Squaw Run	Blawnox	6 04 76	33	—	100	—	1,000	2	1M	02	—
Swamp Cr	Boyertown	4 26 76	25	—	100	—	2,250	3	4M	—	—
Glade Run	Cooperstown	4 22 76	28	—	100	—	—	4	—	—	—
Conoy Cr	Elizabethtown	5 12 76	42	—	100	—	1,012	1	1M	—	—
Bear Cr	Fairview	8 09 76	50	100	—	—	20,800	—	3M	—	—
Spring Cr	Hershey	5 17 76	44	25	75	—	3,117	1	2M	—	—
Abrams Run	King of Prussia	9 03 76	50	25	75	—	2,716	2	1M	—	—
Rock Run	Lancaster	6 22 76	34	10	90	—	1,095	1	1M	—	—
Swabia Cr	Macungie	6 10 76	24	—	100	—	836	2	1M	—	—
S Fk Ten Mile Cr	Mather	8 14 76	21	20	80	—	2,399	2	3M	—	—
W Br Susquehanna	New Columbia	11 25 76	24	1	99	—	6,972	2	1M	01	—
Bender Run	Nisbet	9 07 76	50	—	—	—	86	4	1M	02	—
Big Mahoning Cr	Punxsutauney	6 10 76	31	—	—	—	5,000	4	3M	—	—
Neiferts Cr	Rush	12 16 76	24	25	75	—	6,800	2	1M	—	—
Wolf Cr	Shartlesville	5 10 76	50	—	100	—	100	4	1M	—	—
Middle Spring Cr	Shippensburg	6 08 76	50	40	60	—	1,365	1	2M	02	—
S Br Codorus	Shrewsbury	4 14 76	31	1	99	—	1,822	1	2M	—	—
Slob Cabin Run	State College	8 25 76	34	5	95	—	1,960	2	1M	—	—
Toad Cr	Topton	5 23 76	24	100	—	—	335	4	1M	—	—
Redstone Cr	Uniontown	9 14 76	31	—	100	—	21,016	1	1M	—	—
Charleston Cr	Wellsboro	4 24 76	50	—	100	—	988	1	1M	—	—
Cowanesque R	Westfield	9 02 76	50	—	—	—	1,136	2	3M	—	—
Susquehanna R	York Haven	12 04 76	35	37	63	—	4,476	3	1M	—	—
Rhode Island											
E Providence Res	East Providence	2 22 76	26	5	95	—	—	2	8A	07	—
South Carolina											
Pond Off Sc 430	Edgefield	5 28 76	13	25	75	—	500	2	3A	02	—
Pond-Edgefield	Edgefield Co	7 10 76	50	90	10	—	750	1	1A	02	—
Pond Hwy 327	Effingham	8 24 76	11	100	—	—	250	4	1A	02	—
Pond Sr-38	Effingham	8 24 76	11	100	—	—	250	4	2A	02	—
Pd Off 23-Mi Cr	Pendleto	3 03 76	11	10	90	—	—	1	—	03	—
Duncan Cr	Whitmire	9 07 76	50	21	79	2	36,916	1	3M	01	—
Texas											
Cedar Cr	Angelina Co	8 — 76	28	—	—	—	—	—	—	—	—
West Mud Cr	Angelina Co	8 22 76	31	—	—	—	1,000	—	—	—	—
Nolan Cr	Bell Co	3 08 76	31	—	—	—	—	—	—	—	—
Oyster Bayou	Chambers Co	7 16 76	28	—	—	—	—	—	—	—	—
Long Cr	Clay Co	2 19 76	31	—	—	—	550	—	—	—	—
Hords Cr	Coleman Co	9 17 76	25	—	—	—	100	—	—	—	—
Taylors Bayou	Fannett	4 16 76	25	50	50	20	100	4	—	—	—
Firemans Park La	Graham	5 08 76	11	60	40	10	1,000	3	4A	04	—

Report of Fish Kills, 1976—Cause Identified (Continued)

Body of water	City or town	Date	Cause[1] see code page 54	Type of fish killed		Percent kill with commercial value	Estimated fish killed	Severity[2] see code page 54	Estimated miles or acres affected[3] page 54	Duration	
				Percent game	Percent non-game					Days	Hrs
Brazos R	Granbury	5 13 76	11	80	20	15	—	2	8M	—	—
Plum Cr	Hamilton Co	7 12 76	13	—	—	—	29,000	—	—	—	—
Highland Res	Harris Co	4 28 76	11	—	—	—	3,000	—	—	—	—
Whitney Cr	Hill Co	4 08 76	31	—	—	—	1,394	—	—	—	—
N Llano R	Kimble Co	8 12 76	28	—	—	—	108	—	—	—	—
Holland Cr	Navasota	3 29 76	44	10	90	2	100	4	10M	—	—
San Bernard R	Newgulf	4 07 76	21	10	90	2	100	3	—	02	—
Rodair Gully	Port Arthur	5 25 76	24	5	95	—	1,500	3	1M	—	—
Brazos R	Sommervell Co	4 04 76	11	80	20	15	—	2	11M	—	—
Brazos R	Sommervell Co	4 17 76	11	80	20	20	1,000	2	15M	—	—
Coleto Cr	Yorktown	4 30 76	25	70	30	5	450	3	1M	04	—
Utah											
Price R	Price	4 22 76	50	—	—	—	—	4	3M	—	—
Virginia											
Big Prater Cr	Buchanan Co	6 24 76	21	—	—	—	1,000	2	3M	—	—
Cranberry Cr	Carroll Co	7 09 76	50	—	—	—	2,820	3	2M	01	—
Big Rocky Run	Centreville	3 24 76	42	77	23	—	930	2	2M	04	—
Hurricane Fork	Dante	6 21 76	21	50	50	—	30	3	—	—	—
Crooks Br	Fairfax	5 22 76	11	50	50	—	24	4	2M	04	—
Cedar Cr	Frederick Co	7 28 76	21	50	50	—	400	4	3M	01	—
Hazel Run	Fredericksburg	5 12 76	24	2	98	—	3,740	3	2M	01	—
Rappahannock R	Fredericksburg	8 19 76	44	—	100	—	4	4	1M	—	—
Chesnut Cr	Galax	8 26 76	22	—	—	—	12,673	2	5M	—	—
Tr-Hot Springs R	Hot Springs	6 13 76	50	—	100	—	3,500	2	3M	—	—
Hawksbill Cr	Luray	8 23 76	50	—	—	—	500	—	—	—	—
Tr-Bull Run	Prince William	4 17 76	42	100	—	—	12	4	1M	—	—
Peak Cr	Pulaski Co	4 13 76	33	—	—	—	—	2	4M	—	—
Roanoke R	Roanoke	6 03 76	24	4	96	—	31,490	2	11M	—	—
England Run	Stafford	8 08 76	42	—	100	—	300	4	3M	01	—
S Fk Goose Cr	Villamont	8 18 76	42	—	—	—	38,000	2	5M	—	—
Great Run	Warrenton	8 26 76	31	1	99	—	363	3	10M	01	—
Washington											
Bremerton Harbor	Bremerton	12 30 76	50	100	—	—	—	2	—	01	—
Woodland Cr	Lacey	2 16 76	23	75	25	—	—	3	2M	01	—
Unnamed Cr	Poulsbo	12 30 76	28	—	—	—	—	4	1M	01	—
Willapa R	Raymond	8 11 76	50	50	50	—	30,000	2	4M	03	—
Lake Tapps	Sumner	2 23 76	35	5	95	—	—	3	—	02	—
West Virginia											
Piney Cr	Beckley	10 13 76	21	80	20	—	1,931	2	11M	03	—
Eightmile Cr	Blount	6 10 76	24	—	100	—	600	1	1M	01	—
Sandlick Br	Brunny	12 27 76	25	1	99	—	600	—	2M	—	—
Two-Mile Cr	Charleston	9 05 76	21	5	95	—	2,100	1	2M	03	—
Elk Cr	Clarksburg	9 08 76	50	2	98	—	1,092	2	2M	01	—
Tygari Valley R	Elkins	6 14 76	31	25	75	—	2,000	2	3M	02	—
Big Horse Cr	Julian	8 03 76	42	5	95	—	6,000	1	1M	02	—
Cove Cr	Kiahsville	6 10 76	50	2	98	—	364	3	1M	01	—
Pyles Fk	Mannington	3 05 76	21	20	80	—	332	2	3M	01	—
Dolls Run	Mrgantown	1 03 76	21	10	90	—	1,550	—	2M	02	—
Stillwell Cr	Parkersburg	3 07 76	25	—	100	—	625	3	1M	01	—
Mid Run-W Fork R	Weson	8 24 76	25	3	97	—	358	2	1M	01	—
Lt Huff Cr	Wyoming Co	8 13 76	21	5	95	—	16,244	2	1M	02	—
Wisconsin											
Duncan Cr	Chippewa Falls	8 02 76	33	5	95	—	1,050	2	1M	—	01
Hoods Cr	Franksville	9 09 76	22	—	100	—	50	2	1M	02	—
Nemadji R	Superior	6 15 76	31	100	—	—	500	2	1M	03	—
Wyoming											
Lt Goose Cr	Sheridan	7 20 76	50	2	98	—	—	4	2M	02	—

APPENDIX B


CODES
1 SEVERITY
1 Complete
2 Heavy
3 Moderate
4 Light
2 ESTIMATED MILES OR ACRES AFFECTED
A = Acres
M = Miles

Report of Fish Kills, 1976—Cause Not Specifically Identified

Body of water	City or town	Date	Type of fish killed		Percent kill with commercial value	Estimated fish killed	Severity[1] see code page 64	Estimated miles or acres affected[2] page 64	Duration	
			Percent game	Percent non-game					Days	Hrs.
Alabama										
Bottle Cr	Brooklyn	9 15 76	9	91	1	14,027	3	3M	—	—
N.E. and W. Fowl R.	Mobile	10 13 76	—	—	100	31,600	3	4M	30	—
East Fowl R.	Mobile	9 28 76	—	—	100	27,220	2	2M	—	—
Campbell Cr.	Remlap	6 30 76	75	25	—	1,420	1	3M	—	—
Arkansas										
Stream	Humnoke	9 24 76	10	90	20	—	4	1M	—	—
Canny Cr.	Pine Bluff	5 18 76	60	40	—	3,100	—	2M	—	—
California										
Canal 18	Blythe	11 01 76	—	100	—	120	3	—	—	—
Canal J-03	Blythe	1 06 76	100	—	—	25	4	—	—	—
Dahlia Canal	Brawley	7 06 76	20	80	—	40	4	1M	—	—
Upper Finny La.	Brawley	2 02 76	1	99	—	3,000	2	—	—	—
Salton Sea.	Calapatria	4 21 76	100	—	—	500	3	1A	1	—
Pyramid La.	Castaic	7 14 76	100	—	—	100	4	—	—	—
Sacramento R.	Colusa	9 06 76	100	—	—	26	—	—	—	—
Galirdo Cr.	Concord	1 14 76	10	90	—	340	4	2M	—	—
Dead Man Gulch	Galt	6 04 76	92	8	—	400	2	2M	7	—
Butte Cr.	Gridley	6 11 76	25	75	—	1,700	2	1M	1	—
Sec. 25 R1W T17N	Gridley	5 22 76	100	—	—	25	3	1M	—	6
Dahlia Canal	Imperial Co.	9 01 76	95	5	—	—	2	—	—	—
Novato Cr.	Marin	6 16 76	100	—	100	1,000	2	3M	—	—
Martinez Marina	Martinez	6 25 76	100	—	—	300	2	—	1	—
Pd. on Loud Ranch	Mecca	12 14 76	100	—	—	400	1	1A	2	—
Putah Cr.	Napa	5 02 76	100	—	—	1,200	2	—	—	—
Napa R.	Napa	8 19 76	5	95	—	200	2	1M	2	—
Lateral 5 Drain	Niland	6 19 76	5	95	—	175	2	3M	—	—
Del Paso Slough	N. Sacramento	5 19 76	—	100	—	75	—	—	—	—
Salton Sea	North Shore	5 14 76	1	99	—	6,000	4	—	1	5
Salton Sea	North Shore	5 13 76	1	99	—	5,000	4	—	1	6
Salton Sea	North Shore	6 07 76	—	100	—	25,000	3	—	—	—
Lake Merritt	Oakland	5 16 76	50	50	10	2,000	2	—	—	—
Hansen Dam	Pacoima	2 04 76	40	60	—	12,000	2	853A	14	—
Grayson Cr.	Pleasant Hill	10 18 76	100	—	100	3,000	2	3M	—	—
Lake Evans	Riverside	7 21 76	100	—	—	200	3	—	—	—
Pond-Wm. Land Pk.	Sacramento	9 19 76	—	100	—	750	2	1A	—	—
Port of Stockton	San Joaquin	9 30 76	100	—	—	3,000	2	—	—	—
Smith Ca.	Stockton	9 30 76	100	—	—	11,000	1	1M	—	—
Belvedere Lagoon	Tiburon	6 07 76	20	80	20	2,000	2	—	—	—
Papermill Cr.	Tomales	11 16 76	100	—	100	30	2	1M	—	—
Harbor Lake	Torrance	6 01 76	10	90	—	150	4	—	—	—
Pond	Ventura	12 14 76	—	100	—	17	4	—	—	—
Candlewood CC Pd.	Whittier	12 01 76	—	100	—	250	3	—	—	—
Salton Sea	Wister	11 28 76	—	100	—	250	4	—	—	—
Z Drain	Wister	9 23 76	50	50	—	200	4	—	—	—
Connecticut										
Rooster R.	Bridgeport	7 29 76	—	100	—	50	—	1M	—	—
W. Br. Salmon Br.	Granby	7 10 76	10	90	—	—	2	1M	—	3
Hop Brook	Manchester	7 16 76	1	99	—	300	1	1M	1	—
Long Swamp Brook	Middlebury	3 31 76	100	—	—	30	2	1M	—	—
Fulling Mill Br.	Naugatuck	3 27 76	100	—	—	30	2	1M	—	—
West R.	New Haven	6 08 76	—	100	—	300	—	1M	1	—
Norwalk R.	Norwalk	8 24 76	50	50	—	30	3	1M	—	—
Turners Pond	Stamford	5 06 76	—	100	—	100	4	1A	2	—
Steele Brook	Waterbury	7 14 76	—	—	—	—	4	—	—	—
Oyster R.	West Haven	2 20 76	—	100	—	500	1	1M	1	—
Audley Pond	Westport	7 18 76	—	100	—	200	2	1A	1	—
Delaware										
Trap Pond	Laurel	4 17 76	19	81	—	459	3	17A	7	—

Report of Fish Kills, 1976—Cause Not Specifically Identified (Continued)

Body of water	City or town	Date	Type of fish killed		Percent kill with commercial value	Estimated fish killed	Severity[1] see code page 64	Estimated miles or acres affected[2] page 64	Duration	
			Percent game	Percent non-game					Days	Hrs.
Florida										
Spring La.	Altamonte Sprng	9 16 76	100	—	—	35	4	45A	2	—
Allens Cr.	Clearwater	9 30 76	10	90	50	4		1	M	—
Eco Grande Golf	Hollywood	9 16 76	—	100	—	250	—	4	—	3
Joes Cr.	St. Petersburg	7 18 76	60	40	—	500	3	1M	—	—
Jackson Cr.	Sebring	6 07 76	91	9	—	679	2	1M	—	—
Georgia										
Little Cr.	Alamo	9 09 76	59	41	—	207	3	1M	—	—
Nancy Cr.	Atlanta	9 15 76	58	42	—	24,708	1	12M	3	—
Peachtree Cr.	Atlanta	7 13 76	5	95	—	350	3	3M	1	—
Black Cr.	Brooklet	8 03 76	10	90	—	158	4	1M	—	—
Bull Cr.	Columbus	4 13 76	15	85	—	—	1	1M	3	—
Williams Lake	Cordele	8 04 76	1	99	—	8,500	4	3A	—	24
Big Haynes Cr.	Milstead	7 14 76	—	100	—	20	4	2M	—	—
Caney Cr.	Newnan	8 15 76	83	17	—	104	4	—	—	—
Hawaii										
Ala Wai Drain Ca.	Honolulu	9 22 76	100	—	100	250	4	1M	1	—
Kapalama Dr. Ca.	Honolulu	7 23 76	30	70	30	1,500	3	1M	1	—
Drainage Ca.	Honolulu	4 24 76	10	90	10	1,330	2	1M	2	—
Idaho										
Little Canyon Cr.	Nez Perce	5 08 76	2	98	—	—	1	1M	—	—
Illinois										
Trib-Fox R.	Algonquin	5 25 76	33	67	44	252	2	2M	—	18
Stony Cr.	Danville	4 20 76	27	73	13	3,491	1	2M	1	—
Kickapoo Cr.	Downs	7 09 76	6	94	29	10,775	1	4M	2	—
Clear Cr.	Paris	7 03 76	2	98	2	19,817	2	3M	1	—
Nippersink Cr.	Solon Mills	8 23 76	66	34	11	10,909	2	7M	3	—
Sugar Cr.	Springfield	5 25 76	40	60	60	9,887	2	3M	2	—
Indiana										
Lt. Laughery Cr.	Batesville	5 17 76	50	50	—	6	3	1M	2	—
Turkey Cr.	Milford	6 17 76	3	97	—	190	3	1M	1	—
White River	Muncie	8 14 76	—	—	—	4,784	2	—	—	—
Cicero Cr.	Tipton	10 07 76	40	60	—	339	4	1M	1	—
Iowa										
Iowa R.	Eldora	7 22 76	5	95	—	2,500	2	6M	3	—
Kansas										
Fall River	Neodesha	7 26 76	10	90	40	2,000	3	6M	6	—
Kentucky										
Indian Cr	Cynthiana	6 17 76	—	—	—	500	3	1M	2	—
Lt. Sexton Cr	Manchester	8 09 76	3	97	—	4,286	1	1M	1	—
Panther Cr	Owensboro	9 24 76	—	—	—	1,000	2	5M	3	—
Chaplin R	Perryville	6 18 76	—	—	—	1,000	2	1M	—	—
Road Run	Springfield	3 26 76	—	—	—	2,000	2	3M	—	—
Beech Fk	Springfield	8 16 76	—	—	—	4,280	1	1M	—	
									—	
Maryland										
Potomac R	Seneca	9 08 76	—	100	—	10,000	3	5M	—	—
Massachusetts										
Sandwich Cr.	Sandwich	8 01 76	—	100	—	10,000	2	2M	1	6
Missouri										
H. Letsinger Lake	Ava	6 17 76	100	—	—	300	3	4A	—	—
Big Piney R.	Cabool	4 01 76	50	50	—	179	2	1M	—	—
Charrette Cr.	Warren Co.	8 09 76	—	—	—	750	—	1M	—	—
Montana										
Madison R.	Ennis	7 03 76	90	10	—	10,000	2	3M	3	—

Report of Fish Kills, 1976—Cause Not Specifically Identified (Continued)

Body of water	City or town	Date	Type of fish killed		Percent kill with commercial value	Estimated fish killed	Severity[1] see code page 64	Estimated miles or acres affected[2] page 64	Duration	
			Percent game	Percent non-game					Days	Hrs.
Nebraska										
Indiana Cr.	Beatrice	6 21 76	90	10	—	280	2	1M	—	—
Prochaska Pond	Palmer	6 30 76	100	—	—	525	2	2A	—	—
New Hampshire										
Cocheco R.	Rochester	6 24 76	—	100	—	—	2	3M	1	—
New Jersey										
Sunset La.	Bridgewater Twp	5 19 76	5	95	—	500	3	2A	3	—
Raritan R.	Edison	4 30 76	—	100	—	500	4	1M	1	—
Whippany R.	Morristown	6 15 76	5	95	—	500	2	1M	1	—
Ohio										
Auglaize R.	Auglaize Co.	9 20 76	—	—	—	291	—	—	—	—
Sterling Run.	Brown Co.	9 09 76	—	—	—	18	—	—	—	—
Great Miami R.	Butler Co.	12 28 76	—	—	—	9	—	—	—	—
Pipe Cr.	Erie Co.	5 18 76	—	—	—	2	—	—	—	—
Tiffin R.	Fulton Co.	7 25 76	—	—	—	30	—	—	—	—
Blanchard R.	Hancock Co.	11 20 76	—	—	—	19	—	—	—	—
Black R.	Lorain Co.	6 10 76	—	—	—	90	—	—	—	—
Deer Cr.	Madison Co.	5 19 76	—	—	—	6	—	—	—	—
Black R.	Medina Co.	6 04 76	—	—	—	35	—	—	—	—
Blierdofer Ditch	Mercer Co.	11 17 76	—	—	—	12	—	—	—	—
Ottawa R.	Putnam Co.	11 21 76	—	—	—	166	—	—	—	—
Bear Run.	Richland Co.	4 19 76	—	—	—	104	—	—	—	—
Jackson Ditch	Shelby Co.	9 16 76	—	—	—	19	—	—	—	—
Mid. Fk. Sugar Cr.	Stark Co.	6 17 76	—	—	—	101	—	—	—	—
Bull Cr.	Wood Co.	8 09 76	—	—	—	9	—	—	—	—
Rocky Ford Cr.	Wood Co.	7 08 76	—	—	—	7,823	—	—	—	—
Spring Run.	Wyandot Co.	9 23 76	—	—	—	12	—	—	—	—
Sandusky R.	Wyandot Co.	5 10 76	—	—	—	47	—	—	—	—
Oklahoma										
Deep Red Cr.	Cookietown	8 13 76	20	80	70	276	3	1M	—	—
Duncan La.	Duncan	9 23 76	—	—	—	—	4	—	—	—
Farm Pond	Oklahoma City	4 09 76	100	—	50	30	4	—	—	—
Pryor Cr.	Pryor	9 20 76	10	90	50	5,000	—	—	—	—
Oregon										
Johnson Cr.	Portland	7 19 76	10	90	—	2,500	2	2M	—	—
Johnson Cr.	Portland	8 06 76	10	90	—	10,000	2	3M	—	8
Johnson Cr.	Portland	2 19 76	1	99	—	1,200	3	1M	1	—
Pennsylvania										
Jordan Cr.	Allentown	12 05 76	10	90	—	3,263	2	3M	—	—
Jordan Cr.	Allentown	12 17 76	5	95	—	705	3	2M	—	—
Tr-Lt. Conemaugh.	Cassandra	5 31 76	100	—	—	14	3	1M	—	—
Trib-Otter Cr.	Fredonia	4 16 76	—	100	—	125	3	—	—	—
Whitely Cr.	Greene Co.	6 04 76	—	100	—	43	4	1M	—	—
E. Br. Red Clay Cr.	Kennett Square	5 07 76	—	100	—	611	1	1M	—	—
Reeds Dam	Sykesville	11 — 76	100	—	—	161	4	5A	—	—
Oil Cr.	Titusville	7 06 76	10	90	—	4,000	2	6M	—	5
Valley Cr.	Tredyfrin Twp	2 19 76	100	—	—	54	2	1M	—	—
South Carolina										
Sanders Branch	Hampton	8 27 76	50	50	—	300	2	5M	—	—
Texas										
Turtle Bayou	Chambers Co	7 19 76	—	—	—	600	—	—	—	—
Navasota R	Leon Co	8 16 76	—	—	—	600	—	—	—	—
Lake	Llano.	5 06 76	80	20	2	550	3	1A	—	24
Tres Palacios Ba.	Matagorda Co.	9 — 76	—	—	—	509,750	—	—	—	—
Caney Cr	Maud	4 12 76	80	20	10	550	4	5M	—	—
C Christi Bay	Nueces Co.	8 17 76	—	—	—	—	—	—	—	—
B Heights Marsh	Orange Co.	8 02 76	—	—	—	550	—	—	—	—
Palo Pinto Cr	Palo Pinto Co.	8 02 76	—	—	—	550	—	—	—	—
Onion Cr	Travis Co.	9 25 76	—	—	—	600	—	—	—	—

Report of Fish Kills, 1976—Cause Not Specifically Identified (Continued)

Body of water	City or town	Date	Type of fish killed		Percent kill with commercial value	Estimated fish killed	Severity[1] see code page 64	Estimated miles or acres affected[2] page 64	Duration	
			Percent game	Percent non-game					Days	Hrs.
Waller Cr	Travis Co.	1 05 76	—	—	—	100	—	—	—	—
Upper Keechi Cr	Trinity Co.	8 04 76	—	—	—	600	—	—	—	—
Trinity R	Walker Co.	4 03 76	—	—	—	1,000	—	—	—	—
Washington										
Mason La	Shelton	11 29 76	100	—	—	—	4	—	3	—
Steilacoom La	Steilacoom	6 09 76	—	100	—	1,000	2	210A	3	—
Holmes Harbor	Whidbey Island	10 25 76	25	75	—	1,000	3	3A	1	—
Wide Hollow Cr	Yakima	2 15 76	—	100	—	—	4	1M	1	—
Wisconsin										
Big Rock Cr	St. Croix Falls	6 20 76	100	—	—	400	1	1M	—	—
Wyoming										
Meadowlark Lake	Ten Sleep	8 08 76	100	—	—	800	4	182A	17	—

Appendix C

State Agencies

Alabama Department of Conservation
Game and Fish Division
Fisheries Section
64 North Union Street
Montgomery, Alabama 36104

Water Improvement Commission
Surveillance and Monitoring Section
749 State Office Building
Montgomery, Alabama 36104

Department of Fish and Game
Habitat Protection Section
Subport Building
Juneau, Alaska 99801

Arizona Game and Fish Department
2222 West Greenway Road
Phoenix, Arizona 85023

Arkansas Game and Fish Commission
Fisheries Division
Little Rock, Arkansas 72201

California Department of Fish and Game
Environmental Services Branch
1416 Ninth Street
Sacramento, California 94814

Department of Natural Resources
Division of Wildlife
6060 Broadway
Denver, Colorado 80216

Connecticut Board of Fisheries and Game
Fish and Water Life Unit
Department of Environmental Protection
State Office Building
Hartford, Connecticut 06115

Department of Natural Resources and
Environmental Control
Division of Fish and Wildlife
Fisheries Section
Dover, Delaware 19901

Florida Department of Environmental
Regulation
2562 Executive Center Circle, East
Montgomery Building
Tallahassee, Florida 32301

Georgia Game and Fish Commission
Trinity-Washington Street Building
270 Washington Street, S.W.
Atlanta, Georgia 30334

Division of Fish and Game
1179 Punchbowl Street
Honolulu, Hawaii 96813

Idaho Fish and Game Department
Bureau of Fisheries
P.O. Box 25
Boise, Idaho 83707

Illinois Department of Conservation
Division of Fisheries
605 State Office Building
400 South Spring Street
Springfield, Illinois 62706

Indiana State Board of Health
Division of Water Pollution Control
Water Quality and Standards Branch
1330 West Michigan Street
Indianapolis, Indiana 46206

Iowa State Conservation Commission
300 4th Street
Des Moines, Iowa 50319

Kansas Forestry, Fish and Game Commission
P.O. Box 1028
Pratt, Kansas 67124

Department of Fish and Wildlife Resources
Capital Plaza Tower
Frankfort, Kentucky 40601

Louisiana Stream Control Commission
Drawer F.C., University Station
Baton Rouge, Louisiana 70803

Fish and Game Department
State Office Building
Augusta, Maine 04330

Maryland Department of Water Resources
State Office Building
Annapolis, Maryland 21401

Massachusetts Department of Natural Resources
Division of Marine Fisheries
State Office Building
Government Center
100 Cambridge Street
Boston, Massachusetts 02202

Massachusetts Division of Fisheries and Game
Field Headquarters
Westboro, Massachusetts 01581

Water Resources Commission
Department of Natural Resources
Stevens T. Mason Building
Lansing, Michigan 48926

Minnesota Department of Natural Resources
Division of Fish and Wildlife
390 Centennial Building
St. Paul, Minnesota 55155

Mississippi Air and Water Pollution Control Commission
P.O. Box 827
Jackson, Mississippi 39205

Missouri Department of Conservation
1110 College Avenue
Columbia, Missouri 65201

Missouri Department of Conservation
Division of Fisheries
P.O. Box 180
Jefferson City, Missouri 65101

Department of Fish and Game
Room 134, Cogswell Building
Helena, Montana 59601

Nebraska Game and Parks Commission
2200 North 33rd Street
Lincoln, Nebraska 68503

Nevada Department of Fish and Game
P.O. Box 10678
Reno, Nevada 89510

New Hampshire Water Supply and Pollution Control Commission
P.O. Box 95
Concord, New Hampshire 03301

Division of Fish, Game and Shellfisheries
Bureau of Fisheries Laboratory
Lebanon, New Jersey 08833

New Mexico Department of Game and Fish
State Capitol
Santa Fe, New Mexico 87501

Department of Environmental Conservation
Albany, New York 12201

North Carolina Department of Water and Air Resources
Box 27048
Raleigh, North Carolina 27611

North Dakota Game and Fish Department
Fisheries Division
103½ South Third Street
Bismarck, North Dakota 58501

Ohio Department of Natural Resources
Division of Wildlife
Fountain Square
Columbus, Ohio 43224

Oklahoma Department of Wildlife Conservation
Fisheries Division
1801 North Lincoln Boulevard
Oklahoma City, Oklahoma 73105

Fish and Wildlife Commission
307 State Office Building
Portland, Oregon 97201

Pennsylvania Fish Commission
P.O. Box 1673
Harrisburg, Pennsylvania 17120

Rhode Island Department of Natural Resources
Division of Fish and Wildlife
83 Park Street
Providence, Rhode Island 02903

South Carolina Wildlife and Marine Resources Department
Division of Game
P.O. Box 167
Columbia, South Carolina 29202

South Dakota Department of Game, Fish and Parks
Division of Game and Fish
State Office Building #1
Pierre, South Dakota 57501

Tennessee Game and Fish Commission
Doctors Building, Room 600
Nashville, Tennessee 37203

Texas Parks and Wildlife Department
Fish and Wildlife Division
John H. Reagan Building
Austin, Texas 78701

Utah Department of Natural Resources
Division of Fish and Game
1596 West North Temple
Salt Lake City, Utah 84116

Vermont Fish and Game Department
Research and Management Center
Roxbury, Vermont 05659

Virginia State Water Control Board
Bureau of Enforcement
P.O. Box 11143
Richmond, Virginia 23230

Washington State Department of Ecology
P.O. Box 829
Olympia, Washington 98501

West Virginia Department of Natural Resources
Division of Wildlife Resources
Charleston, West Virginia 25305

Wisconsin Department of Natural Resources
Bureau of Standards and Surveys
Box 450
Madison, Wisconsin 53701

Department of Natural Resources
Bureau of Water Quality
Box 450
Madison, Wisconsin 53701

Wyoming Game and Fish Department
Box 712
Lander, Wyoming 82520

Appendix D

Report of Pollution-Caused Fish Kill

Sample Form

U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF WATER PLANNING AND STANDARDS
WASHINGTON, D.C. 20460

REPORT OF POLLUTION-CAUSED FISH KILL

Form Approved OMB No. 158-R0036

FOR OWP USE ONLY

1A. LOCATION *(Stream, Lake, Ocean, etc; Latitude-Longitude)*

2. DATE OF KILL

B. NEAREST TOWN AND COUNTY

C. STATE

3. TYPE OF WATER
☐ FRESH ☐ SALT ☐ ESTUARY

4. POLLUTION SOURCE - TYPE OF OPERATION

A. AGRICULTURAL OPERATIONS
- ☐ POISONS *(Pesticides, etc)*
- ☐ FERTILIZERS
- ☐ MANURE DRAINAGE, ENSILAGE LIQUORS, OR FEED LOT OPERATIONS
- ☐ HANDLING OF EQUIPMENT AND CONTAINERS

B. INDUSTRIAL OPERATIONS
- ☐ MINING
- ☐ CHEMICALS
- ☐ FOOD AND KINDRED PRODUCTS
- ☐ TEXTILES
- ☐ OTHER:
- ☐ METALS
- ☐ PETROLEUM
- ☐ PAPER AND ALLIED PRODUCTS
- ☐ RUBBER AND PLASTICS

C. MUNICIPAL OPERATIONS
- ☐ SEWERAGE SYSTEM
- ☐ REFUSE DISPOSAL
- ☐ WATER SYSTEM
- ☐ SWIMMING POOL
- ☐ POWER *(Public Service)*
- ☐ PEST CONTROL

D. TRANSPORTATION OPERATIONS
- ☐ RAIL
- ☐ TRUCK
- ☐ BARGE OR BOAT
- ☐ PIPE-LINE
- ☐ AIR

E. CONSTRUCTION OR OTHER
- ☐ CONSTRUCTION
- ☐ OTHER:

F.
- ☐ UNKNOWN

G. SPECIFIC POLLUTANT OR FACTOR CHANGING WATER CHARACTERISTICS *(Name of chemical, thermal discharge, etc.)*

5. TYPE OF FISH KILL

GAME	%
NON-GAME	%
TOTAL	100 %
COMMERCIAL	%

6. EST. NO. KILLED

7. SEVERITY
☐ TOTAL ☐ HEAVY ☐ MOD. ☐ LIGHT

8. EXTENT OF AREA AFFECTED

A. MILES OF STREAM	B. ACRES OF LAKE

9. DURATION OF CRITICAL EFFECT

A. DAYS	B. HOURS

10. ADDITIONAL REMARKS *(Include effects on other than marine life, e.g., shellfish, waterfowl, etc)*

11. REPORTING OFFICIAL	12. AGENCY MAILING ADDRESS	13. DATE OF REPORT

EPA Form 7500-8 (Rev. 7-75) PREVIOUS EDITION MAY BE USED UNTIL SUPPLY IS EXHAUSTED.

INSTRUCTIONS: Upon completion fold card to show proper address and staple or tape long edge together.

Appendix E

Glossary

Sources of Pollution by Type of Operation

Fish kills may be caused by pollution from a large number and variety of sources. To facilitate reporting of kills, these pollution sources have been categorized according to the types of operations (municipal, industrial, etc.) producing the pollution. Following are definitions of each operation to include breakdowns into subcategories.

Agricultural Operations

Pollution from agricultural operations results primarily from wastewater runoff from fields where various chemical compounds are used for pest control and fertilizers. Runoff from feedlot operations are also included under this category. In addition, a probable cause of pollution lies in the handling of various pesticides or fertilizers, the cleaning of equipment used to disperse these chemicals, and the handling and disposal of the containers.

- Poisons (Pesticides, Etc.)

Poisons include any of the "cides" used at the site of agricultural operations, which may be introduced into a water body through a runoff after a rain or through settling from the air.

- Fertilizers

This subcategory applies to commercial fertilizers after they have been delivered for use.

- Manure Drainage, Ensilage Liquors, or Feed Lot Operations

In addition to the operations named in this heading, this subcategory includes other agricultural operations which may be a source of pollution through poor housekeeping practices.

- Handling of Equipment and Containers

This subcategory includes washing of equipment, handling and storage of pesticide or fertilizer compounds before use, and container disposal.

Construction, or Other

- Construction operations such as the building of highways, dams, industrial complexes and other structures in or near waterways, are a frequent source of pollution.

The following are examples of the "other" category.

- Large residential or custodial facilities not connected to municipal sewers but having their own system, for example, Federal, State, and church institutions, custodial institutions such as old folks homes, universities, etc.

- Domestic service operations in suburban or rural areas resulting in direct discharges such as spent-drycleaning solutions and wash and rinse water from coin laundries and dry cleaners, and spent floor and paint cleaners.

- Highway restaurants, motels, resort areas, and auto service areas which may or may not have their own treatment plant.

Industrial Operations

Industrial operations involve manufacturing or processing industrial and commercial products.

- Mining

Pollution from mining operations is most often caused by acid mine drainage from coal mines. In addition, coal washings and taconite tailing disposal are included here as well as side products from all other mining operations, including mining for ore, limestone, phosphate, etc.

- Chemicals

This subcategory includes manufacture of the following:

Basic chemicals such as acids, alkalies, salts, and organic chemicals;

Chemical products to be used in further manufacture such as synthetic fibers, plastic materials, dry colors, and pigments; and,

Finished chemical products for ultimate consumption (cosmetics, drugs and soaps); or to be used as materials or supplies in other industries (paints, fertilizers, and explosives).

- Food and Kindred Products

These operations include those involved in preparing and processing fresh and raw food items and other related products for the market. Examples include

Sugar refining;

Canning, dehydrating, freezing, or curing of fruits, vegetables, or fish and other seafood;

Grain processing into flour, cereal products, etc.;

Slaughtering or meat packing;

Dressing poultry;

Any milk-handling operation including dairy farm, cheese factory, condensery, creamery, or ice cream plant;

Breweries, wineries, or distilleries operations;

Rendering plants or vegetable oil manufacture; and,

Animal feed manufacture.

- Textiles

Textile production covers all milltype operations, including bleaching and dyeing processes

- Metals

This subcategory includes all operations involving metals and plating (except mining), such as blast furnaces, smelting, rolling mills, pickling, heat treatment, etc. Common sources of wastes are metal cleaning solutions and plating vats which contain large amounts of acid, cyanide, copper, iron, chrome and arsenic, all of which are specific causes of fish kills.

In addition, coke ovens and inefficient clarifier tanks in steel mills add toxic chemicals and turbidity to waste water.

- Petroleum

Petroleum covers oil or gas well drilling, oil refining, and the manufacture of any petroleum products.

- Paper and Allied Products

Paper and allied products covers paper-making in any of its stages, including resultant sludge deposits in streams or lakes.

- Rubber and Plastics

This subcategory includes manufacture from natural, synthetic, or reclaimed rubber. It also includes manufacturing involved in molding primary plastics for trade, and miscellaneous finished plastic products.

- Other industrial

"Other" applies to those industries not specifically designated. The following are examples of potential entries under this item.

Lumber and wood products production including logging, chemical treatment, and sawmill operations through the finished product;

Leather and leather products processing and production;

Sand and gravel washing; and,

Automobile manufacturing.

Municipal Operations

Municipal operations are those activities that are the responsibility of the municipality in providing public utilities and other services.

- Sewerage System

Includes municipal sanitary and storm sewers and combined sewers. The wastes may be treated or untreated before they enter or leave the municipal system.

- Refuse Disposal

Refuse disposal concerns dumps, land fill projects, etc., used for disposal of solid wastes. The prime cause of fish kills from these sources is drainage from these areas, and deposits of ash from incinerators into surface water bodies.

- Water System

Fish kills charged to water system include kills caused by excessive use of chemicals for pipe cleaning and for algae, weed and insect control in reservoirs. A common source of kills from this source is high chlorine solutions drained from new pipe lines, storage tanks, reservoirs, and pump stations, which are used to sterilize new water supply facilities.

- Swimming Pools

Fish kills charged to swimming pool operations generally result from cleaning operations or use of excessive chlorine. This subcategory applies if pool drainage is not connected to the city sewer system, regardless of who owns or operates the pool.

- Power (Public Service)

Power generation considered here is the production of power intended for consumption by the general public, versus power generation necessary to operate a manufacturing plant. Thermal pollution is of prime concern, although wastewaters such as that from boiler blowdown sometimes cause fish kills, most often during low flows.

- Pest Control

This subcategory of operations includes spraying of ponds, creeks, marshes, or use of other various methods of insect control when the poisons used are deposited directly into a waterway, as opposed to being conveyed to the waterway via a municipal sewer system.

Transportation Operations

The major source of pollution from these operations is accidental spillage into waterways of products in transit regardless of source, destination, or ultimate use.

- Rail

Fish kills charged to this subcategory are caused by accidental product spills, whether due to a wreck or by handling in yards. Waste discharge from railyard operations also applies here.

- Pipeline

Pipeline means those lines used to transport liquids or gases for long distances.

- Truck

A fish kill charged to this subcategory most often results from a wreck, leakage or careless handling in transit and at terminals.

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- Air

This subcategory includes operation of airports, which are frequent producers of oily wastes and highly alkaline aircraft washrack drainage, as well as aircraft operations. It also includes aircraft crashes which should be considered in the same light as accidents involving trains, trucks, boats, etc.

- Barge or Boat

Barge or boat operations may result in pollution through spillage of products resulting from bilge discharges, fire, collision, sinking, or mishandling the products while in transit. Transit, in this case, includes transfer to or from the vessel while docked.

Unknown

The unknown category is applied to a fish kill when the pollution source operation cannot be determined or surmised, and the investigator is reasonably sure that the kill was due to pollution.

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